S. HRG. 101-956

NOAA OCEAN AND COASTAL PROGRAMS

HEARING

BEFORE THE

NATIONAL OCEAN POLICY STUDY

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

SECOND SESSION

ON

THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION'S OCEAN AND COASTAL PROGRAMS

S. 2247

TO ESTABLISH THE FLORIDA KEYS NATIONAL MARINE SANCTUARY IN THE STATE OF FLORIDA, AND FOR OTHER PURPOSES

JUNE 14, 1990

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NOAA OCEAN AND COASTAL PROGRAMS

THURSDAY, JUNE 14, 1990

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
NATIONAL OCEAN POLICY STUDY,
Washington, DC.

The Committee and National Ocean Policy Study met, pursuant to notice, at 9:35 a.m., in room SR-253, Russell Senate Office Building, Hon. John F. Kerry presiding.

Staff members assigned to this hearing: Mike Nussman and Grant Cunningham, professional staff members and John Moran and Earl Comstock, minority staff counsels.

OPENING STATEMENT BY SENATOR KERRY

Senator KERRY. This hearing will come to order.

Good morning to everybody and welcome to today's oversight hearing on the National Oceanic and Atmospheric Administration's Ocean and Coastal Programs, and also the Florida Keys National Marine Sanctuary and Protection Act.

As the summer begins, we are once again finding ourselves, at least our coastal areas, on the front page of every newspaper, as well as on the evening news. We have got oil from the *Bermuda Star* fouling Buzzard's Bay in Massachusetts. The *Mega Borg* continues to burn, or has almost stopped burning, I guess, off the coast of Galveston, TX. Shellfish beds are already closing at alarming rates, and the summer is only just beginning.

Our coastal regions, I have said before, are under siege from manmade problems: oil spills, development, urban and agricultural runoff, beach pollution, and the like.

So today we are here to assess the programs that have been in place to monitor and to manage our coastal areas, to see if they are really up to the tremendous task that has been set for them, and whether or not we are adequately monitoring and can put in place a better system, conceivably, of monitoring.

Specifically, we are going to look at the ocean and coastal programs of NOAA's National Ocean Service, and the Office of Oceanic and Atmospheric Research. The primary role of the National Ocean Service is in the area of mapping and charting, marine observations and assessments, and ocean and coastal management. These programs seek to define, to monitor, and to manage ocean and coastal waters.

And another critical program within this mosaic is the Office of Coastal Zone Management, which has been the subject of a number

of hearings before the Committee, and therefore will not be addressed, except perhaps tangentially, in today's hearing.

The Office of Oceanic and Atmospheric Research is also going to be reviewed today. That office oversees the ocean and Great Lakes programs, which includes the National Sea Grant College Program, and the National Undersea Research Program, and the Great Lakes Environmental Research Lab. And these and other important programs are making significant steps we think in helping our scientific understanding of the marine environment.

Obviously, though, one wonders sometimes, when we measure the level of our increased capacity, the coastal areas that are in need of improved protection. Our coastal waters are facing enormous increasing pressure from population growth, from development, and from the pollution which goes with it. In my home state, almost 18,000 acres of shell fishing waters just in Buzzard's Bay alone were closed recently due to pollution, costing $17 million to New Bedford alone.

The *Exxon Valdez* was only the beginning of a long list of oil spills—Long Beach, CA, Narraganset Bay, RI, Delaware, New Jersey, all of these have had spills which threatened coastal resources. And last weekend, an explosion occurred on the supertanker in the Gulf of Mexico carrying 38 million gallons of oil, and only the following day a cruise ship ran aground not far from the Cape Cod Canal, releasing 7,500 gallons of heavy oil that has fouled some of our coastline.

And both vessels were in danger of spilling still more oil.

One of the questions we have to ask here today is can NOAA handle the long-term monitoring and the effects of these spills? Do they have the resources necessary to assess the damage to the natural resources?

In light of the need for stronger environmental protection, I am personally concerned that the President has decreased funding for many of the marine programs in his budget, including a 48 percent reduction in the Office of Oceanic and Atmospheric Research and the ocean and Great Lakes programs. The President has proposed a slight increase in the National Oceanic Service budget, but that is principally for the Coastal Ocean Program.

So I look forward today to hearing from our witnesses about NOAA's ocean and coastal initiative which was initiated last year, and I am hopeful that this effort will further our goals in managing and protecting our coastal waters.

We are also going to be discussing marine monitoring, which is a very important component of any marine environmental protection program. The National Research Council recently completed a study that identifies ways to improve the quality and usefulness of our monitoring information. And we will want to hear today about the results of this study, particularly in light of legislation that I will be introducing regarding marine monitoring.

Monitoring is conducted today as part of the National Oceanic Service National Status and Trends Program, which is a comprehensive effort to try to examine the long-term effects of human activities on the marine environment. That information is collected at 180 sites around the country. And more in-depth studies are con-

ducted in selected areas, including Boston Harbor and Prince William Sound.

The Administration proposes to increase the funding of this program by some $2 million as part of the coastal ocean program effort.

And finally, we are going to be discussing today Senator Bob Graham's bill to establish the Florida Keys Marine Sanctuary. The Florida Keys are an extremely valuable national resource. The bill was prompted by a series of vessel groundings that have destroyed large areas of the reef in the Keys. And many may recall that we were successful at getting the Stellwagen Bank on the marine sanctuary list in order to safeguard that important resource off Massachusetts. And I think that study is now well under way, and only underscoring the importance of the kind of effort which Senator Graham has engaged in.

Before we begin our first panel of witnesses, let me turn to my colleague who always has a significant interest in all these issues, and whom I enjoy working with, Senator Stevens.

Senator Graham, do you want to join us up here? I see you are sitting there in the audience.

Okay, you are going to wait and join the panel.

OPENING STATEMENT BY SENATOR STEVENS

Senator STEVENS. I did not want to hold Bob up. But let me just say, Mr. Chairman, that I welcome this hearing. I think it is very timely. And I am hopeful that we can once again establish congressional support for the whole activity schedule of NOAA. I see some indication that some people might want to do away with NOAA and fold it into EPA, which I really cannot understand, since it took us so long to establish a separate entity to deal with the oceans and the atmosphere.

But I am looking forward to working with you, and hopefully to fold into this bill some of the lessons we have learned in Prince William Sound over the last year. I see no reason for mistakes to be made in another part of the country just because they were made in Alaska first.

And it does seem to me that our colleague from Florida has got a point. I have spent a great portion of my personal time in my lifetime in the Keys, Senator Graham. So I am delighted to see you moving forward for greater protection for the Keys. And I am hopeful that we can act quickly to give you the support you need if there is anyone doing anything to harm those sensitive areas.

Thank you, Mr. Chairman.

Senator KERRY. Thank you very much, Senator Stevens.

I am delighted to welcome Senator Graham, who I know has to race off to 25 other meetings. And so, Senator Graham, if you have an opening statement, we would welcome it.

I would like to, at this point, insert opening statements from Senators Hollings and Kasten into the record.

[The statements and bill follow:]

OPENING STATEMENT BY THE CHAIRMAN

Good morning. Today, the Full Committee and the National Ocean Policy Study have convened this oversight hearing to review the ocean and coastal programs of

the National Oceanic and Atmospheric Administration (NOAA). Additionally, we will examine NOAA's agency-wide program support.

The various ocean and coastal programs of NOAA are conducted by either the National Ocean Service (NOS) or Oceanic and Atmospheric Research (OAR). Altogether, the major purpose of these programs is to promote the rational use of the Nation's coastal lands, territorial waters and air space. In carrying out its responsibilities, the agency collects and disseminates a wealth of information.

For example, NOAA's National Status and Trends program is developing a body of reliable information on the concentration of toxic chemicals in the Nation's estuaries to assess the long-term impact of those contaminants. The mapping and Charting program in NOS produces nautical charts to aid marine navigators. Further, the Observation and Assessment program provide information for responding to spills of oil or other hazardous materials. Finally, the National Marine Sanctuary Program designates biologically-valuable marine and estuarine areas for protection and management.

All these activities are vital to protection of our ocean and coastal areas. In examining the agency's activities in this regard, we must ask some important questions. How does the agency determine the need to develop certain programs? Is the agency properly managing its current programs? What benefits are we deriving from these programs?

If we use the Administration's budget proposal as a gauge of the importance of particular programs, then it appears NOAA is trying to redirect some of its efforts regarding ocean and coastal activities. According to the budget proposal, its Coastal Ocean Program—a relatively new initiative—needs an $11 million increase, while established programs such as Coastal Zone Management and Sea Grant are cut. These funding proposals raise questions for me about whether NOAA is on the right course.

This hearing hopefully will examine the reasoning behind such decisions. We have Dr. Knauss here to give us some answers. Further, Dr. Boesch from Louisiana will review with us some of the pluses and minuses of our coastal monitoring activities. Finally, we will hear from a group of gentlemen from Florida who will tell us about a proposal to make the entire Florida Keys into a marine sanctuary. I look forward to hearing the testimony from each of the witnesses, and reviewing in greater detail NOAA's ocean and coastal programs.

Opening Statement by Senator Kasten

Mr. Chairman, I am pleased that we are reviewing today the ocean and coastal programs of NOAA. These programs are of particular importance as we see more of our population living in coastal regions, which are already environmentally sensitive areas. I would also like to point out that I represent only Commerce Committee member from a state on the country's Third Coast, and we are just as interested in NOAA's Great Lakes programs as the ocean coastal states are in those programs.

I am pleased that the Administration has recognized the priority that coastal science programs deserve. The proper management and monitoring of man's impact upon the coastal regions must be understood in detail in order for policy makers to be able to make wise decisions.

I look toward to the testimony of our witnesses today, and thank you for holding this hearing.

101ST CONGRESS
2D SESSION

S. 2247

To establish the Florida Keys National Marine Sanctuary in the State of Florida, and for other purposes.

IN THE SENATE OF THE UNITED STATES

MARCH 7, (legislative day, JANUARY 23), 1990

Mr. GRAHAM introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

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A BILL

To establish the Florida Keys National Marine Sanctuary in the State of Florida, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Florida Keys National Marine Sanctuary and Protection Act".

SEC. 2. FINDINGS.

The Congress finds and declares the following:

(1) The Florida Keys extend approximately two hundred and twenty miles southwest from the southern tip of the Florida peninsula.

(2) Adjacent to the Florida Keys land mass are located spectacular, unique, and nationally significant marine environments, including tropical fisheries, seagrass meadows, mangrove islands, and extensive living coral reefs.

(3) These unique marine environments support rich biological communities possessing extensive conservation, recreational, commercial, ecological, historical, research, educational, and esthetic values which give this area special national significance.

(4) These environments are the marine equivalent of tropical rain forests in that they support high levels of biological diversity, are fragile and easily susceptible to damage from human activities, and possess high value to human beings if properly conserved.

(5) These marine environments are subject to damage and loss of their biological integrity from a variety of onshore and offshore sources of disturbance.

(6) Vessel groundings along the reefs of the Florida Keys represent one of many serious threats to the continued vitality of the marine environments of the Florida Keys which must be addressed in order to protect their values.

(7) Action is necessary to provide comprehensive protection for these marine environments by establish-

ing a Florida Keys National Marine Sanctuary, by restricting commercial vessel traffic within such Sanctuary, and by requiring promulgation of a management plan and regulations to assure that all allowed uses are compatible with the purposes for which such Sanctuary was established.

(8) The agencies of the United States must cooperate fully to achieve the necessary protection of sanctuary resources.

SEC. 3. POLICY AND PURPOSE.

(a) POLICY.—It is the policy of this Act to protect the fisheries, wildlife, coral reefs, and other aspects of the Florida Keys marine environments.

(b) PURPOSE.—The purpose of this Act is to protect the nationally significant natural resources of the area described in section 5(b), to educate and interpret for the public regarding the Florida Keys marine environment, and to manage such human uses of the Florida Keys Reef Tract and adjacent waters as may be determined by the Secretary to be compatible with this Act.

SEC. 4. DEFINITIONS.

As used in this Act, the term—

(1) "adverse effect" means any factor, force, or action that would independently or cumulatively

damage, diminish, degrade, impair, destroy, or otherwise harm—

(A) any natural resource of the Sanctuary; or

(B) any of those qualities, values, or purposes for which the Sanctuary is designated.

(2) "comprehensive management plan" means the plan developed pursuant to section 7 to ensure the proper management of compatible uses in the Sanctuary and the protection of Sanctuary resources in perpetuity.

(3) "Federal undertaking" means (A) any Federal, federally assisted, or federally licensed action, activity, or program or (B) the Federal approval, sanction, assistance, or support of any non-Federal action, activity, or program.

(4) "Sanctuary" means the Florida Keys National Marine Sanctuary established and designated under section 5.

(5) "Secretary" means the Secretary of Commerce.

SEC. 5. SANCTUARY DESIGNATION.

(a) ESTABLISHMENT AND DESIGNATION.—The area described in subsection (b) is hereby established and designated, subject to subsection (c), as the Florida Keys National Marine Sanctuary, for administration in accordance with this

Act and the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1431 et seq.).

(b) AREA INCLUDED.—The area referred to in subsection (a) consists of all submerged lands and waters within the seaward boundary of the territorial sea of the United States located—

(1) in a general southerly direction from the Florida Keys to a seaward extent of the six-hundred-foot isobath; and

(2) between the northeastern-most boundary of Biscayne National Park and the western-most boundary of Fort Jefferson National Monument.

(c) AREAS IN BOUNDARIES OF STATE OF FLORIDA.—The designation under subsection (a) shall not take effect with respect to an area located within the seaward boundary of the State of Florida if not later than ninety days after the date of enactment of this Act, the Governor of the State of Florida notifies the Secretary in writing that the designation of that area is unacceptable. Not later than thirty days after receiving such a notification, the Secretary shall publish and transmit to the Congress the boundaries of the Sanctuary, as modified in accordance with the notification.

(d) BOUNDARY EXTENSIONS.—Subsequent to a boundary review conducted pursuant to section 7(a)7, the Secretary may make such minor extensions to the boundaries of

the Sanctuary as necessary to properly protect Sanctuary resources.

SEC. 6. PROHIBITION ON CERTAIN USES.

(a) COMMERCIAL VESSEL TRAFFIC.—

(1) IN GENERAL.—No person shall operate within the boundary of the Sanctuary a vessel which is used in the trade of carrying cargo or in the trade of servicing offshore installations.

(2) LIMITATION.—This subsection does not prohibit operation of a vessel—

(A) in a channel federally maintained or marked; or

(B) in accordance with regulations promulgated under paragraph (3).

(3) REGULATIONS.—The Secretary, in consultation with the Secretary of the department in which the Coast Guard is operating, the United States Corps of Engineers, the Governor of the State of Florida, and appropriate local government representatives, may include regulations in the management plan for the Sanctuary that would allow the operation of certain types of vessels engaged in a trade described in paragraph (1), in that portion of the Sanctuary seaward of the three-hundred-foot contour; except that such regulations shall include—

(A) a requirement that the Secretary issue a finding that any vessel allowed to operate under this subsection would not pose a threat to Sanctuary resources when operated in accordance with such regulations; and

(B) other provisions necessary to prevent vessel groundings within the Sanctuary.

(b) MINERAL AND HYDROCARBON EXPLORATION AND DEVELOPMENT.—No mining, mineral extraction, or hydrocarbon exploration, development, or production shall be permitted within the boundary of the Sanctuary.

(c) OTHER USES.—The Secretary shall prohibit such other uses or classes of uses as may be determined to be incompatible with the purposes for which the Sanctuary is established. Such determination shall be made in accordance with development of a comprehensive management plan and regulations pursuant to section 7(a)(1) of this Act.

SEC. 7. COMPREHENSIVE MANAGEMENT PLAN.

(a) PREPARATION OF PLAN.—The Secretary, in consultation with State and local government authorities, shall prepare a comprehensive management plan and implementing regulations to assure the protection of the marine environments within the Sanctuary in perpetuity. The Secretary shall complete such comprehensive management plan and final regulations for the Sanctuary not later than thirty

months after the date of enactment of this Act. In developing the plan and regulations, the Secretary shall generally follow the procedures specified in section 304 of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1434), including those provisions requiring extensive public participation, opportunities for public comment, and congressional review. Such comprehensive management plan shall include, but not be limited to, the following:

(1) A determination of which uses, or classes of uses, are incompatible with the purposes for which the Sanctuary is established and should be prohibited in accordance with section 6.

(2) A management strategy for compatible uses, including consideration of temporal and geographical zoning, to ensure protection of Sanctuary resources.

(3) The identification of existing or potential sources of damage or disturbance to Sanctuary resources, within or outside the Sanctuary boundary.

(4) Strategies to prevent or mitigate existing or potential sources of damage or disturbance to Sanctuary resources, particularly including strategies to ensure protection of water quality.

(5) The identification of needs for further research, and the establishment of a long-term ecological monitoring program.

(6) The identification of funding needed to fully implement the plan's provisions.

(7) The identification of any need for minor modifications to the Sanctuary boundary, pursuant to section 5(d), as may be necessary to properly protect and enhance the nationally significant resources of the area.

(8) A mechanism to ensure coordination and cooperation between Sanctuary managers and managers of State and Federal lands and waters within or in the vicinity of the Sanctuary.

(9) A strategy to promote education, among users of the Sanctuary, about coral reef conservation and navigational safety.

(10) A procedure for incorporation of the existing Looe Key and Key Largo National Marine Sanctuaries into the Florida Keys National Marine Sanctuary to assure their protection and management in accordance with provisions of this Act.

(b) PROMULGATION OF IMPLEMENTING REGULATIONS.—The Secretary shall promulgate such rules and regulations as may be necessary to implement provisions of the comprehensive management plan.

(c) PUBLIC PARTICIPATION.—The Secretary shall provide for participation by the general public in development of the comprehensive management plan.

SEC. 8. FEDERAL PROGRAM REVIEW.

(a) POLICY.—No Federal undertaking may adversely affect the Sanctuary unless the head of the Federal agency having jurisdiction over the undertaking shall determine that—

(1) there are no prudent and feasible alternatives to the undertaking, including the alternative of not proceeding with the undertaking;

(2) the undertaking includes all possible planning and actions to minimize adverse effects, and assurances that activities necessary to so minimize adverse effects will be funded and carried out; and

(3) the public benefits of the undertaking justify its approval despite the adverse effects to Sanctuary resources.

(b) PROCEDURES.—

(1) NOTICE AND OPPORTUNITY FOR COMMENT.—Prior to the approval of any Federal undertaking that may result in an adverse effect upon the Sanctuary, the head of the Federal agency having jurisdiction over the undertaking shall—

(A) promptly notify the Secretary, appropriate State and local government officials, and interested members of the public when the agency is planning the undertaking or the undertaking is before the agency, or when preparing an environ-

mental assessment or evaluation or environmental impact statement pursuant to the National Environmental Policy Act of 1969 (41 U.S.C. 4321 et seq.); and

(B) provide the Secretary reasonable opportunity to comment on the undertaking and findings made pursuant to subsection (a).

(2) When the Secretary, not having received notice under paragraph (1), is informed of a planned Federal undertaking, and of reasonable grounds to justify further inquiry into the possibility of a resulting adverse effect, the Secretary shall notify the head of the Federal agency having jurisdiction over the undertaking, describing the grounds of inquiry. The head of the agency, prior to any other action in pursuit of the undertaking, shall respond with the notice required in paragraph (1) or with his or her report demonstrating that the undertaking will not result in an adverse effect. Upon receipt of such report, the Secretary may accept the determination of the agency head or may require the agency head to issue the notice and afford the opportunity for hearing or comment provided by subsection (b)(1) or other law.

(c) EXEMPTIONS FOR NATIONAL SECURITY AND DISASTERS.—The provisions of this section shall not apply to any undertaking—

(1) where the head of a Federal agency determines that the undertaking is necessary for reasons of national security; or

(2) in immediate preparation for or response to a disaster and where the head of the agency determines that the undertaking is necessary to reduce the potential loss of human life, or involves an emergency situation which does not allow compliance with this section.

SEC. 9. PENALTIES AND ENFORCEMENT.

(a) CIVIL PENALTIES AND DAMAGES.—Any person subject to the jurisdiction of the United States who violates this Act is subject to civil penalties and liability for damages under sections 307 and 312 of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1437 and 1443), and any vessel used for such a violation is subject to seizure and forfeiture under such sections.

(b) ENFORCEMENT.—The Secretary may enforce this Act under sections 307 and 312 of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1437 and 1443).

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SEC. 10. SUMS.

Such sums as may be necessary are authorized for appropriation under the provisions of this Act.

STATEMENT OF HON. BOB GRAHAM, U.S. SENATOR FROM FLORIDA

Senator GRAHAM. Thank you very much, Mr. Chairman.

I appreciate this opportunity to make a brief presentation on behalf of the Florida Keys National Marine Sanctuary and Protection Act. I know that you will be hearing from several people later in today's session relative to this matter. I am particularly appreciative of the large number of people who have come from the Florida Keys as an indication of their interest in and support for this legislation.

Mr. Chairman, I would like to ask if the hearing record could be expanded to include written statements from individuals who desire to do so, but who were unable to be here today.

Senator KERRY. Without objection, we would be delighted to welcome those.

Senator GRAHAM. Mr. Chairman, as Senator Stevens has just said, the Florida Keys represent not only a national, but also an international treasure of great value. It is also a treasure which has been under increasing threat in recent years.

I am proud of the efforts the State of Florida has made to protect its resources during the last several decades of high growth. Florida recognizes the importance of working with the Federal Government to develop comprehensive plans for conserving sensitive lands and water.

For example, the protection of the Everglades ecosystem has gone far beyond the simple mapping of park boundaries and placement of a few Federal park officers. Protection of this unique ecosystem represents a joint Federal-State-local government effort to protect endangered species, regulate waterflow to developed and undeveloped lands, identify appropriate areas for agricultural use, provide facilities for recreation and research, and support a fragile ecosystem rich with plant and animal life.

The coral reef tract along the coast of the Florida Keys is worthy of this same sort of comprehensive management scheme. I invite you to visit the keys and view the reef first hand. Only then will you truly appreciate our concern. I invite you to come to the keys, not just so that you can see the reef, but so that you can witness the heavy flow of traffic on and around it. You will realize why we argue for a marine sanctuary designation.

Last year Congressman Dante Fascell introduced legislation to expand the two existing marine sanctuaries, one at Key Largo and one at Looe Key, towards the goal of a comprehensive sanctuary that would run from Key Largo to the Dry Tortugas. This was done in large part as a result of a series of tanker groundings which had occurred in the months prior to November of last year.

Congressman Fascell regrets that he could not be here this morning, but this proposal represents his genuine concern for both the natural and the human resources of the Florida Keys.

Since the introduction of Congressman Fascell's bill, we have learned a great deal more about the waters surrounding the Florida Keys. Concerned citizens of Monroe County, many of whom are represented by the individuals who will testify here today, have conducted a massive public education program, which even caught the attention of President Bush.

We have learned that the large vessel groundings are only a small part of the threat to the Keys. Daily this coral reef is exposed to various forms of abuse and misuse, often unintentional. For example, tourists on the water often anchor on the reef or bump up against the reef, unaware that both actions cause serious damage. Even a small scape from a diver rubbing or standing on the reef can cause irreversible damage.

Except in several small areas, boat traffic is generally unrestricted. Without sophisticated navigational aids and a good idea about the location of the reef track, even the well-meaning boater is likely to cause harm to the reef.

We have also learned more about the threats to the quality of the water in this area. Both onshore and offshore activities are poisoning the normal growth of corals and other marine life.

The National Marine Sanctuary Program is experienced in determining what sort of uses are compatible with the goals of protection of this resource. I have been impressed with the work that has been done with the two sanctuaries which currently exist at Looe Key and Key Largo. What we need now is a Keys-wide education, research and enforcement plan to see that the entire coral reef track is protected without jeopardizing legitimate commercial and recreational activities.

This plan must be developed with extensive input from the citizens of the Florida Keys. The current process for marine sanctuary designation includes a lengthy public and Congressional review process. This legislation, which has been cosponsored by Senators Adams, Ford and Gore, also specifically provides for public participation in the development of a management plan.

I appreciate your Committee's expedited attention to this legislation, and hope that we can move forward promptly at this session of the Congress.

Thank you, Mr. Chairman.

Senator KERRY. Thank you, Senator Graham. We appreciate your comments on it, which are helpful. And I think it is an extremely worthwhile effort, and we look forward to hearing from the witnesses regarding it.

Senator STEVENS. If I could just interrupt.

Senator KERRY. Yes.

Senator STEVENS. Senator Graham, I would be pleased to become a cosponsor of that bill, as I have indicated. In the time I have spent down here—it is an awful long way to get home on personal vacation with a large family, so I have spent a lot of time down there. I do think that this plan needs not only the participation of people living there, but people who do not live in the area also

have a great love for the Keys. I hope you will keep that in mind. But I would like to join you.

Senator GRAHAM. Well, I very much appreciate your desire to become a cosponsor, agree with your observation that the Florida Keys really belong to the whole Nation as a unique environmental resource.

Senator KERRY. Thank you, Senator Graham.

If I could ask Dr. Knauss, the Under Secretary for Oceans and Atmosphere at NOAA, to come up here with his army.

Dr. Knauss, welcome back. We are glad to have you. You are joined, I see, by Dr. Alan Thomas, the Assistant Administrator for Ocean and Atmospheric Research; Dr. Andy Robertson, the Chief of Ocean Assessment Division; and Dr. Don Scavia, the Office of the Chief Scientist for Coastal Ocean Programs.

We are delighted to have you here, and I look forward to your testimony.

STATEMENT OF DR. JOHN KNAUSS, UNDER SECRETARY FOR OCEANS AND ATMOSPHERE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, ACCOMPANIED BY DR. ALAN THOMAS, ACTING ASSISTANT ADMINISTRATOR FOR OCEANIC AND ATMOSPHERIC RESEARCH; DR. ANDY ROBERTSON, CHIEF OF OCEAN ASSESSMENT DIVISION, OFFICE OF OCEANOGRAPHY AND MARINE ASSESSMENT; AND DR. DON SCAVIA, OFFICE OF THE CHIEF SCIENTIST FOR COASTAL OCEAN PROGRAMS

Dr. KNAUSS. Thank you, sir. It is good to be back again.

Senator KERRY. You like spending time up here.

Dr. KNAUSS. I have a rather lengthy full testimony, which I would like to be entered into the record, Mr. Chairman.

Senator KERRY. Without objection, it will be placed in the record in full.

Dr. KNAUSS. The testimony is essentially divided into three parts. The first is an overview of our coastal and ocean programs; the second addresses the questions of NOAA/EPA coordination and cooperation with respect to our coastal responsibilities; and the third is a rather detailed response to Senate bill 2247, Senate Graham's bill on the Florida Keys, which we just heard about.

What I would like to do is take just a few moments to mention several key points in this three-part testimony.

I think the first and most important thing I can say about NOAA's coastal and ocean programs is that I believe that they are alive and well. The President's total 1991 budget request for NOAA totals $1.3 billion. That is almost a 35 percent increase over the budget submitted by the Administration in 1990.

Included in that request are a number of programs that have not had Administration support in the recent past. One of them is the Coastal Zone Management program, a program which I feel particularly strongly about because I had——

Senator KERRY. Dr. Knauss, can I just interrupt you once. Can you pull the mike down a little bit towards you. I think it might help.

Dr. KNAUSS. One was the Coastal Zone Management Program, which, as I say, has support from the Administration this year, for

the first time in some time. I was a member of the Stratton Commission, more than 20 years ago, those recommendations brought forth the Coastal Zone Management Act, which Senator Hollings had so much to do with getting enacted in 1972.

The Administration has also submitted a reauthorization proposal for the Coastal Zone Management Act. Now that we are supporting it again, we can talk about what we think we need to do in order to make some improvements, particularly with respect to the problems of non-point source pollution, coastal hazards, and that kind of thing.

The 1991 budget request also requests money for the National Sea Grant College Program, again, for the first time in a good many years. I believe these restorations in the President's budget are a clear signal of President Bush's commitment to address concerns about our coastal resources, and particularly in partnership with our academic institutions.

There are two NOAA-wide initiatives that are also proposed for significant funding increases in fiscal year 1991, the Coastal Ocean Program and NOAA's Climate and Global Change Research Program. The Coastal Ocean Program is a long-term NOAA-wide—and I wish to emphasize NOAA-wide—effort to improve our knowledge of coastal and Great Lakes environmental processes. And by increasing our knowledge, we increase the quality of the necessary environmental decisions which we must continually make—the federal government, the states, and others.

There are five major elements of the program in its present form: concerns about toxic chemical contamination, nutrient overenrichment, physical impacts (i.e., what happens when things like Hurricane Hugo hit the coast), estuarine habitats and coastal fisheries ecosystems.

As I said, the Coastal Ocean Program is NOAA-wide, and it is closely related to parts of our other NOAA programs. It gives us an opportunity essentially to look at all of the things that NOAA does in various programs and provide funds to enrich or beef up some aspects of those programs, whether it is the National Status and Trends Program, whether it is the Sea Grant Program, whether it is with the National Weather Service to help us with our storm surge forecast and so forth. But it gives me, as Administrator of NOAA, an opportunity to see to it that we run what I think is the best totally integrated program on the coastal ocean issues that are NOAA's responsibilities.

Let me say a few words about our fisheries programs. I think they are entering into a critical period. The Magnuson Act has been very successful in Americanizing the great fisheries off our coast. In retrospect, that may have been the simplest part of the task. We must concentrate on conserving those resources, so there will be adequate supplies for those who wish to fish next year, in five years, or 10 years—the next generation.

The Americanization of the Nation's fisheries has led to increasing challenges for managing living marine resources. Demand for seafood has risen dramatically in recent years. Yet there are few or almost no major new fisheries to develop. We must protect and enhance the habitats that make our fisheries productive. And we

must have management plans that protect and conserve those resources, as well as allocate those resources.

If I could turn for a moment to EPA and NOAA cooperation. In my full testimony, I have summarized eight major recommendations from the National Academy of Engineering's Marine Board Report, called "Managing Troubled Waters: The Role of Marine Environmental Monitoring," the report that you noted in your opening statement, sir.

That report deals with NOAA/EPA cooperation in formulating a comprehensive linked, regional national marine environmental monitoring program. And that report evaluates existing U.S. marine environmental quality monitoring activities, and makes recommendations for improvements.

My colleagues and I would be happy to elaborate on NOAA's responses to that report and to those recommendations.

A very important part of that report or of our monitoring program is NOAA's National Status and Trends Program, which we have been operating since 1984. It is the largest, longest-running coastal environmental monitoring program that has ever been maintained nationwide.

I am also pleased to note that we have made great strides over the past year in coordinating these activities with those of EPA's Environmental Monitoring and Assessment Program, which goes by the acronym EMAP.

And finally, let me close, Mr. Chairman, with a word about marine sanctuaries and estuarine research reserves, and in particular, the designation of an additional sanctuary in the Florida Keys, specifically, Senator Graham's bill, S. 2247. I am happy to convey the Administration's strong support for the spirit and for the approach of that legislation. There are detailed comments on S. 2247 that are in my formal testimony.

S. 2247 provides a way of addressing the threat of large vessels running aground on reefs, as Senator Graham noted. It also takes advantage of the comprehensive approach to conservation and management as special areas of the marine environment.

I believe this Committee is familiar with NOAA's track record in protecting marine protected areas like the Florida Keys, which will be expanded under Senator Graham's bill. I think the existing Key Largo and Looe Key marine sanctuaries are fine examples of the benefits of preserving these areas now and in the future. And certainly S. 2247 will expand that area.

This Administration is committed to the conservation and sound, effective management of those resources and to working closely with state and local governments in assuring that outcome.

In conclusion, Mr. Chairman, let me just say I am proud to be a part of the President's expanded environmental programs. And as we prepare for the challenges that face us in the coming years, I believe that NOAA will continue to serve as the vanguard of those efforts as we approach the 21st century.

Thank you, sir.

[The statement follows:]

Testimony
of
John A. Knauss
Under Secretary of Commerce for Oceans and Atmosphere
U.S. Department of Commerce
before the
Committee on Commerce, Science, and Transportation
and
National Ocean Policy Study

United States Senate

June 14, 1990

Mr. Chairman and Members of the Committee:

Good morning. I am pleased to join you today to discuss coastal and ocean programs within the National Oceanic and Atmospheric Administration (NOAA), U. S. Department of Commerce. I take pride in being able to present a Fiscal Year 1991 budget request which reflects this Administration's commitment to investments in science and to the preservation and protection of the coastal and ocean environment.

The 1991 NOAA Budget Request allows us to move forward aggressively into the new decade. The request is a well-designed and integrated approach to seeking adequate funding for scientific inquiry, environmental monitoring and public service. The President's FY 1991 budget request for the NOAA Operations, Research and Facilities (ORF) appropriation totals $1.316 billion, an almost 35 percent increase over the FY 1990 requested appropriation.

First, I will discuss some highlights of this budget for coastal and ocean programs, and later discuss a number of specific programs in more detail. I will conclude my testimony by providing the Administration's comments on S. 2247.

I'd like to call your attention to several on-going NOAA programs, particularly the Coastal Zone Management Program. As the Chairman of the Stratton Commission panel that originally proposed the concept of coastal zone management, I feel a strong kinship for this program. I am pleased to be able to submit a budget request which funds grants to states at $30 million. As you know, the FY 1990 budget requested termination of state grants.

The Administration has submitted a reauthorization proposal for the Coastal Zone Management Act (CZMA). The Administration's proposal continues support for the policy that the coastal states must be encouraged through Federal matching grants, to focus on emerging national priority issues such as nonpoint source pollution and coastal hazards. I assure you that NOAA and the Department of Commerce are committed to a revitalized CZM program, and are capable of meeting the challenge of the tasks ahead.

Also in FY 1991, you will note that the budget requests funding for the National Sea Grant College Program. This departure from the previous Administration position is a clear signal of President Bush's commitment to address concerns about our coastal resources. We recognize the importance of tapping into the pool of scientific expertise available in our academic institutions. The Administration has submitted a reauthorization proposal to the Congress for the Sea Grant program.

Two major NOAA-wide initiatives are proposed for significant funding increases in FY 1991. One of those initiatives, NOAA's Coastal Ocean Program, focuses on improving our understanding of the environmental issues impacting the quality of America's coastal waters and on provising improved data for decision-makers. The FY 1991

budget contains $17.4 million for this program, almost triple that of the FY 1990 appropriation. NOAA also is playing a pivotal role in the U.S. Climate and Global Change Research Program. We have requested $87 million, a four-fold increase over last year, with about $20.7 million of that increase directed at ocean-related programs.

A key Department of Commerce objective is to increase American competitiveness in the global economy. The proposed NOAA program contributes to this objective by linking the environment and competitiveness to support the theme "A Healthy Environment is Good Business." The budget for FY 1991 contains additional funding ($10.2 million) for new mission-focused fisheries programs to enhance the Agency's capability to understand, characterize, monitor, and predict changes in living marine resource populations and harvesting activities. This budget commitment supports the resource conservation philosophy of the Bush Administration. You will find that, with this budget proposal, the Department of Commerce clearly establishes environmental priorities within NOAA. In this context, our science supports the implementation of programs which protect, conserve, and foster the wise use of living marine resources. Our science programs also support the conservation and mitigation of habitats critical to resource productivity and provide data necessary to make decisions to facilitate trade in fishery products.

The Americanization of the Nation's fisheries has presented increasing challenges for managing living marine resources. The demand for seafood has risen dramatically in the past few years, yet there are no major new fisheries to develop, underscoring even more the need to protect and enhance the habitats essential to fisheries productivity.

The public is demanding that the difficult management decisions regarding strategies to conserve and rebuild re-

source populations and to allocate available fisheries resources among competing domestic users be based on better information. Public concern about the health of our coastal waters has remained high in light of the continuing focus on oil spills, wetland pollution, ocean dumping, fish and marine mammal disease, medical wastes, and the safety of seafood for human consumption. NOAA has major responsibility to assess these issues and recommend appropriate actions.

Coastal Zone Management

The Coastal Zone Management Act of 1972 established a state-Federal partnership for the management of the Nation's coastal resources. NOAA has guided the program since that time, assisting states in developing effective coastal zone management. As population pressures on our coastal areas increase, the need for a strong and viable coastal zone program in NOAA is even more apparent. At present, 29 of the 35 eligible states and territories participate in the program.

To maintain our tradition of cooperative Federal and state management, NOAA proposes a restructured program that addresses the critical, emerging issues in the coastal zone. The Administration's reauthorization proposal includes provisions for the protection of wetlands, reduction of risks to life and property from coastal hazards, increased public access, reduction of non-point sources of pollution, and improved management of beach and marine debris. It also places new emphasis on the need for a coordinated national effort to resolve coastal problems. States will continue to receive financial and technical assistance to implement Coastal Zone Management plans. Federal interest in the balanced management of coastal environmental protection and development will therefore be ensured.

Certainly, we recognize the continuing interest of this Committee and the Congress in the CZMA. As you are aware, the Administration has concerns about S. 1189, including the consistency provisions. We look forward to working with you in developing a bill acceptable to both the Administration and the Congress for this program.

Marine Sanctuaries and Estuarine Research Reserves

National Marine Sanctuaries and National Estuarine Research Reserves are important components of effective coastal resource management. NOAA currently operates eight National Marine Sanctuaries. During FY 1990 and FY 1991, NOAA will designate, or consider for designation, six additional sites, and will study four other sites to determine their suitability for designation. In cooperation with the states, NOAA currently manages 18 Estuarine Research Reserves, and will add three more Reserves to the system by the end of FY 1991. Sanctuaries and Reserves protect vital resources from degradation, provide important natural research laboratories, and promote public education on the coastal and ocean resources, as well as recreational opportunities. In FY 1991, an increase of $200,000 is requested to augment the designation process for research proposals for marine sanctuaries.

At present, three new marine sanctuaries and one new estuarine reserve are being designated. The Flower Garden Banks National Marine Sanctuary, offshore of Texas and Louisiana, will be designated in the fall of 1990. The area represents the northernmost coral reef community in the Gulf of Mexico, and it contains a valuable collection of tropical coral reefs, fish, and associated invertebrates. Monterey Bay, California, will be a designated sanctuary in early

1991. This area includes the largest underwater canyon in the Nation and its surrounding ecosystem. Because of its proximity to the coast, upwelling occurs, supporting a diverse and abundant biological community. Norfolk Canyon, located off the mouth of the Chesapeake Bay and the Virginia coast, will also be designated in early 1991. Norfolk Canyon provides habitat for a wide variety of demersal and pelagic fish, and supports diverse migratory populations of marine mammals. In addition, the Virginia National Estuarine Research Reserve will be designated in September 1990. The reserve will include four sites along the York River tributary of Chesapeake Bay.

Coastal Ocean Program

NOAA's ocean budget for FY 1991 includes $11 million in additional funding to enhance the Coastal Ocean Program. NOAA has the scientific expertise, and the unique resources to apply scientific knowledge toward examining the complex problems. The Coastal Ocean Program integrates all of NOAA's components to develop and implement agency-wide programs to help the Nation reduce future problems. Three critical goals form the core of NOAA's Coastal Ocean Program:

- Improved predictions of coastal ocean pollution and degradation,
- Improved conservation and management of living marine resources, and
- Improved protection of life and property in coastal areas.

To expand our understanding and predictive capabilities in the coastal ocean, NOAA will conduct programs of specific research and assessments in five critical areas: Nutrient Over-Enrichment; Estuarine Habitats; Coastal Fisheries Ecosystems; Toxic Chemical Contamination; and Physical Impacts.

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The Nutrients Program will conduct a nationwide assessment of the nutrient over-enrichment problems in coastal and estuarine waters as part of our National Status and Trends Program. The results of this assessment will be used to monitor conditions in critical areas. Research on nutrient-enhanced coastal ocean productivity will enable NOAA to better understand and predict the impacts of over-production on water quality and living resources in coastal waters.

NOAA will continue estuarine habitat research and assessment started in FY 1990 on seagrass and tidal wetland habitats. Efforts will focus on understanding the role that habitat quality plays in the productivity and health of important estuarine species, as well as investigating techniques to restore habitats. NOAA will expand its use of satellite remote-sensing and aerial photography to map and monitor changes in seagrass and wetland acreage, as well as wetland functional value. This will provide decision-makers with information to implement policies for habitat protection and responsible management.

A significant increase requested within the Coastal Ocean Program is to support research and model development to reduce the possible errors in our current fishery forecasts. Efforts in FY 1991 will strengthen and integrate the research conducted in our base programs into studies on specific key ecosystems to build better models of the variability in fish stock dynamics due to natural and human-induced factors within the ecosystem. These efforts will help develop more effective fishery management plans.

NOAA will enhance its Toxic Chemical Contaminants Program to improve monitoring and assessments of highly contaminated areas, to increase our ability to model the fate

and effects of contaminants, and to provide practical options for decision makers to address problems in their specific areas. These efforts will include specific studies on the effects toxic chemical contaminants have on living resources and the development of improved indicators of environmental stress.

Hurricanes and their devastating winds and killer storm surges are but one example of physical impacts that affect the Nation's 95,000-mile tidal and Great Lakes shorelines. Intense ocean storms in winter and tsunamis caused by coastal and underwater seismic events also cause substantial loss of life and millions of dollars in damage annually. Efforts of the Coastal Ocean Program in understanding physical impacts will lessen the risk of natural hazards to coastal resources and populations. These efforts will include filling in critical ocean data gaps; establishing more reliable predictions of coastal flooding from storm surge; and developing a prediction capability for tsunami inundation.

The Center for Ocean Analysis and Prediction (COAP), in Monterey, California, is a national NOAA Center for the development, exchange, integration and dissemination of biological, chemical and physical ocean products and services that contribute to management of living marine resources, and that serve to foster coordination and cooperation between NOAA line organizations and other Federal, state and local agencies. The Center was established to address important issues related to NOAA's ability to monitor and predict changes in the ocean environment. Applied research and operational activities at COAP will be coordinated with work at other NOAA facilities in support of both the Coastal Ocean and Global Change Programs. One immediate example of information available from COAP is real-time sea surface temperatures produced by the Navy's Fleet Numerical

Oceanography Center. This information is used by commercial fishermen to locate temperature-sensitive fish populations.

Much of the research and assessment needed to address problems in the coastal ocean relies on similar sets of basic ocean observations. In this regard, NOAA will expand its CoastWatch program to other regions in the U.S. CoastWatch now operates off the Southeast U.S. coast and in the Chesapeake Bay. The program provides analysis of satellite imagery, aircraft monitoring, marine forecast products, and other information to help anticipate and track unusual environmental events. NOAA CoastWatch was initiated in August 1988 in response to a red tide event off the coast of North Carolina. This NOAA capability, part of the Coastal Ocean Program, has evolved since that time to deliver near real-time environmental information in support of Federal, state, and local decision-makers responsible for managing the Nation's marine resources. The goals of CoastWatch are to map tidal wetlands and to monitor on a regular basis and predict unusual environmental events. FY 1990 funding is being used to provide CoastWatch coverage to the entire East Coast and the Great Lakes through redistribution nodes located in Ann Arbor, MI, Narraganset, RI, and Beaufort, NC. In FY 1991 we plan to complete CoastWatch mapping and change-analysis for tidal wetlands in the Chesapeake Bay.

Overall, the Coastal Ocean Program is designed to direct NOAA-wide expertise to understand and help resolve critical problems of our estuarine and coastal ocean ecosystems. Scientists from both NOAA and national and regional research institutions work cooperatively to conduct state-of-the-art investigations. The new information developed will be synthesized into formats that meet the needs of fishery management councils, coastal zone management programs, and national estuary programs.

Sea Grant

The National Sea Grant College Program, now in its third decade, has developed a strong infrastructure of marine research and technology transfer at academic institutions. Sea Grant constitutes a national source of research expertise on marine aquaculture, marine biotechnology, fisheries recruitment, underutilized fish species, seafood product improvement, estuarine processes, critical habitat, coastal processes, ocean technology, marine policy, and fates and effects of toxic pollutants. From this extensive research base Sea Grant has provided an intellectual foundation for developing many of the research components of the NOAA-wide Coastal Ocean Program.

Sea Grant has been restructured to increase its focus on programs of national significance and to complement NOAA mission research by developing its ability to draw upon the research talent in its network of over 200 participating institutions and more than 3,000 scientists, engineers, and students.

Ocean Services

The ability to solve the recurring problems in the coastal ocean would be impossible without the baseline information provided by NOAA's Ocean Services Program. In FY 1991, the budget for Ocean Services will increase by $2.3 million, allowing the program to maintain its commitment to ocean data collection, quality control, analysis, prediction, and access to information. These services support marine weather forecasting, the Coastal Ocean Program, and the Global Climate Change Program. NOAA's Ocean Services Program also operates three National Centers -- the Ocean Products Center, the Navy/NOAA Joint Ice Center, and the Ocean

Applications Group -- which are integral parts of our marine data analysis, distribution, and predictive numerical modeling capability. Other core activities include maintaining an inventory of existing ocean observing platforms, maintaining and designing observation systems, and coordinating validation of ocean sensing satellites. The program is building a regional ocean communications network to provide other Federal agencies, state and local governments, and academic institutions with access to environmental information. FY 1991 funding will strengthen existing data bases and development of interactive workstation capabilities as well as provide opportunities to expand both collection and predictive functions.

Ocean Assessment

FY 1991 funding will continue the support of critical base programs that monitor the health of the Nation's coastal waters, provide comprehensive data bases for strategic assessment, and support hazardous materials response.

NOAA's National Status and Trends (NS&T) Program was begun in 1984 in response to the need for information assessing the effects of human activities on environmental quality in coastal areas. This program monitors concentrations of toxic chemicals and trace elements in fish, shellfish, and sediments at approximately 250 coastal and estuarine sites nationwide. Samples are collected annually and analyzed to determine levels of toxins such as DDT, PCB's, mercury, and lead. It is the first program to use a uniform set of techniques to measure trends in coastal and estuarine environmental quality nationwide. A specimen bank of samples is maintained at the National Institute of Standards and Technology for future analyses. A related research effort is examining the relationship between high

levels of toxic chemicals and the biological responses in fish and shellfish. Enhancements through the Coastal Ocean Program have strengthened the program.

One of our most innovative programs to provide information for coastal and ocean decision-making is our Strategic Assessment Program. This Program is pioneering nationwide new concepts in information synthesis and microcomputer-based information systems for decision-making. The Program is responsible for providing comprehensive assessments and predictions of natural and human induced changes in the coastal ocean, and provides decision makers at all levels of government with problem-focused scientific information. The Program also publishes thematic atlases, maintains large data bases on characteristics of the coastal environment, and is developing user-friendly geographic information systems. For example, the National Estuarine Inventory identifies physical characteristics, marine species, land use, wetlands and recreation for over 125 estuaries.

A major threat to the health of the coastal oceans is the damage from oil and other hazardous materials spills. NOAA provides on-scene scientific support to the U.S. Coast Guard. Our responsibilities entail projecting spill trajectories, analyzing the chemical composition of spilled material, and identifying sensitive marine and estuarine areas. In FY 1991 NOAA will continue improving our response and assessment capabilities. Our Hazardous Materials Response Program also has developed the highly successful Computer Aided Management of Emergency Operations (CAMEO) system, now used by over 4,000 local fire departments to respond to chemical accidents.

With new FY 1990 resources, NOAA is building a small interdisciplinary damage assessment team to respond to major incidents that harm its public trust resources, including national marine sanctuaries, fisheries, and marine mammals. This team will assess damages, support NOAA damage claims against responsible parties, and plan and implement restoration of damaged habitats.

Ocean and Great Lakes Research

NOAA's ongoing base program of ocean and Great Lakes research seeks to increase our understanding of coastal and marine processes, and supports the new Coastal Ocean Program. A second important goal of our core research program is to provide the technical basis for enhancing the Nation's marine economic sector.

The research effort draws on unique capabilities at our Environmental Research Laboratories -- the Great Lakes Environmental Research Laboratory in Ann Arbor, the Pacific Marine Environmental Laboratory in Seattle, and the Atlantic Oceanographic and Meteorological Laboratory in Miami -- and from our links to the university sector. This partnership between NOAA and the academic community is a strong and versatile keystone of the research program supporting NOAA mission responsibilities and responding to other critical national issues.

NOAA conducts marine environmental research to understand and predict physical and chemical processes and to develop a sound scientific basis for management, development, and use of coastal, estuarine, and Great Lakes waters. This includes research to:

- o understand the relationships between physical and chemical variables and ecosystem productivity,
- o understand how physical and biochemical processes in estuarine and coastal environments affect the fates of pathogens and toxic chemicals introduced to these environments,
- o develop and test models of contaminant behavior,
- o understand the effects of seafloor hydrothermal venting on the chemistry and thermal characteristics of the ocean, and
- o predict hazardous or special conditions in the oceans, Great Lakes, and Alaskan Arctic (winds, waves, storm surge, ice dynamics).

Ongoing research on contaminated sediments is an excellent example of how NOAA's research capabilities are addressing a current issue. Scientists at the Great Lakes Environmental Research Laboratory have developed a number of bioassay techniques to improve the sensitivity of how we measure the effects of sediment-associated contaminants on biota.

An area of emerging national importance in ocean and Great Lakes research that NOAA has recognized is the introduction of exotic species from foreign vessels' ballast water into our ecosystems. This issue is highlighted by the phenomenal spread of the zebra mussel in the Great Lakes. First noticed in Lake St. Clair in late spring of 1988, the zebra mussel had spread throughout Lake Erie and into Lake Ontario by fall 1989. Both the Great Lakes Environmental Research Laboratory and the Great Lakes Sea Grant programs are focusing research on this problem. The research involves investigations into the fundamental growth and population dynamics of the organism, its distribution, and its potential effect on the lake ecosystems.

Research on marine resource assessment provides information to allow rational use and development of marine resources. A prime example is the NOAA Fisheries Oceanography Coordinated Investigations (FOCI), that combine the expertise of NOAA fishery scientists, oceanographers, and meteorologists. The goal of the project is to understand and model the physical, chemical and biological interactions that affect the successful recruitment into the fishery of walleye pollock spawned in Shelikof Strait, Alaska.

Over the past five years, NOAA in cooperation with the state-Federally supported Chesapeake Bay Program (CBP), has been conducting the Chesapeake Bay Study to monitor and assess living resources and their habitats in the Bay. This study supports three Bay-wide committees that address 1) fisheries data collection and stock assessment, 2) toxic contaminant transport, fate, and effects research, and 3) monitoring status and trends of chlorophyll and wetlands through use of remote sensing technologies. NOAA provides an on-site scientist at the EPA Chesapeake Bay Liaison Office, as well as targeting NOAA activities to bring special resources to bear on CBP issues.

Climate and Global Change

NOAA is a major participant in the U.S. Global Change Research Program. Our role in this national program emphasizes a wide range of oceanic and atmospheric observational research: focused research on ocean-atmosphere interactions, biogeochemical dynamics, and the global hydrologic cycle; and improved climate models, predictions and information management.

Reliable predictions of climate change require a major effort in ocean observations, process studies and modeling activities. Of the $67 million increase requested in FY 1991

for Climate and Global Change, roughly $20.7 million is directed to ocean-related programs.

An important element in FY 1991 is an expansion of the Tropical Ocean and Global Atmosphere (TOGA) Project, an international effort to understand the role of the El Nino/Southern Oscillation in interannual climate variability. TOGA has led to important advances in predicting this coupled ocean-atmosphere phenomenon and its global effects. In 1991, we will continue the on-going TOGA effort, support deployment of an ocean thermal and wind measurement monitoring array in the tropical Pacific, and begin a large field program (the Coupled Ocean Atmosphere Response Experiment) focusing on the western tropical Pacific where El Nino events are thought to originate.

Another major area of emphasis within climate and global change involves augmenting long-term ocean observations. In 1991, NOAA will continue installation of state-of-the-art equipment for a global network for the measurement of absolute sea level. This baseline will allow the determination of any long-term, climate-induced sea level rise without the bias caused by land motions. The NOAA program also will support large-scale measurements of the temperature structure of the upper ocean, an essential measurement for climate purposes, since the heat content of the upper 3 meters of the ocean is equal to that of the entire atmosphere.

Because the ocean will always be undersampled in comparison to the atmosphere, models must be developed to fill in the areas where no data are available. An ocean model developed at the NOAA Geophysical Fluid Dynamics Laboratory and run operationally in the tropical Pacific for the TOGA Project will be expanded globally in FY 1991.

Recent modeling and geochemical studies have shown that the influence of the ocean on climate is not confined to the surface, but is likely to involve the deep circulation of the ocean, particularly in the Atlantic. For this reason, NOAA plans to initiate a study focusing on the interaction of the Atlantic Ocean and climate, particularly on decadal time scales. This is part of the planned NOAA contribution to the World Ocean Circulation Experiment, an international effort to study ocean circulation on a global scale.

Current estimates suggest that 25 percent or less of the carbon dioxide emitted to the atmosphere by human activities is taken up by the ocean. In coordination with the international Joint Global Ocean Flux program, NOAA will expand on an existing ocean carbon program designed to examine the exchange of carbon between the air and sea.

The impacts of climate change certainly will affect marine ecosystems, and thus the fishery resources over which NOAA has stewardship. Studies examining the response of marine ecosystems to such climate-related changes as ocean temperature changes, precipitation change, and sea level rise will be supported in FY 1991.

New Technology and Data Management

Important to new technology issues is the management of NOAA's oceanographic and atmospheric data. A part of a new approach to data management in NOAA is our new Earth Systems Data Directory that is being implemented as part of an evolving interagency system of directories. It is imperative that all data collected by NOAA researchers and contractors be documented in the NOAA directory and sent to NOAA data centers to be archived. These procedures will assure that all data collected by NOAA scientists will be documented and

made available to the scientific community.

The demand for high quality coastal and ocean data and information that has been processed and presented in a useful form is growing rapidly as issues like global climate change and coastal ocean pollution become more prominent. In addition, the explosion in micro-computer technology, geographic information and other information analysis systems, and predictive models means more sophisticated users and requirements for digital data. In order to respond to these needs, NOAA will bring state-of-the-art technology to its operations. NOAA will increase its emphasis on continuously managing environmental data through the steps of planning, acquisition, processing, calibration/validation and dissemination of data. State-of-the-art technology must be incorporated in NOAA operations to optimize these data management activities through the data management portion of the United States Glocal Change Research Program.

Many of NOAA's traditional ocean products and services are changing and expanding to incorporate this new technology. For example, our nautical charting program is implementing an Automated Nautical Charting System. This automated charting, information, and graphics system has the capability to handle activities such as data collection, interactive editing, and output of nautical chart graphics from a digital data base. When fully operational, the system will increase productivity, improve quality, and allow NOAA to meet increasing demands for digital data.

Also in the nautical chart program, NOAA is conducting multi-beam bathymetric surveys and producing high resolution maps of the Exclusive Economic Zone (EEZ). To date, more than 70,000 square nautical miles of the EEZ have been mapped, making the data available for about 40 maps. The

first seven maps have been published since the national security classification issue was resolved last spring, and the backlog of unpublished maps will be reduced over the next several years. In FY 1990, about 25,000 square nautical miles are to be surveyed for production of 12 maps. Given the planned shiptime, about 30,000 square nautical miles and roughly 20 maps will be produced in FY 1991.

NOAA continues to expand the use of the Shipboard Environmental [Data] Acquisition System, or SEAS, aboard ships of opportunity. The system enables manual or automatic entry and transmission of standard shipboard meteorological observations, such as winds and temperature, and oceanographic observations, such as currents and subsurface temperature. The data is automatically transmitted via satellite to the National Weather Service and other users. Use of SEAS increases timely and accurate data from ocean areas, to ultimately provide better marine forecasts. SEAS software has recently become available that will enable use of the system without installation of special hardware, allowing us to take advantage of more ships at sea.

NOAA is developing several state-of-the-art coastal resource information systems to improve data access for the scientific community and for coastal resource managers. COMPAS, just one example, is a powerful, NOAA desktop information system designed for rapid access and management of coastal data in mapped or graphic formats. Designed initially for state-level coastal planners and managers, it will soon include simple water quality modeling capability to simulate pollutant transport. A COMPAS prototype has been developed cooperatively with the State of Texas. It includes information for eight estuaries on:

-physical and hydrologic characteristics;
-land use;
-habitats;
-shellfish-growing waters;
-distribution and abundance of fisheries;
-point and nonpoint pollution sources;
-Status and Trends Program monitoring data; and
-regulatory data (EPA discharge permits, Corps "404" wetlands permits).

NOAA Fleet

During FY 1991, NOAA will operate 17 active ships to support programs in oceanography and global change, charting and mapping, fisheries research, and marine assessment. An increase of $5.7 million has been proposed for fleet operations. An additional $4.0 million is requested for a modernization and service life extension program for the aging NOAA ships. These ships will play an increasing role in climate and global change research and coastal ocean science investigations. Another $2 million is requested to reactivate and operate the DAVIDSON, that has been inactive due to a budget shortfall.

Deep Seabed Hard Minerals Resources

Although commercial-scale operations under the Deep Seabed Hard Mineral Resources Act are not expected to be achieved for some years, NOAA has developed commercial regulations to allow U.S. consortia to proceed with necessary planning and related activities. In 1989, final rules were published.

Meanwhile, and for FY 1991, NOAA will continue to oversee licenses' exploration activities, to monitor other ocean minerals activities, and to conduct studies to support future regulatory decisions, focusing mainly on environmental concerns in cooperation with other seabed mining countries.

Marine Board Recommendations

The Marine Board of the National Research Council recently published a report entitled, "Managing Troubled Waters: The Role of Marine Environmental Monitoring," that evaluates existing U.S. marine environmental quality monitoring activities and makes recommendations for improvements.

I have summarized below the eight major recommendations from the Marine Board report that deal with NOAA/EPA cooperation in formulating a comprehensive, linked regional/national marine environmental monitoring program. Each recommendation is followed by a short statement summarizing the present status of NOAA's response to that recommendation.

Recommendation #1: EPA and NOAA should cooperate to develop a more effective national program to monitor environmental status and trends in the coastal ocean and estuaries. The program should combine regional programs with a sparser network of long-term stations and studies including some in natural areas not heavily influenced by human activities. The regional programs should emphasize intensive studies to develop understanding of cause-effect relationships and support and evaluate management decisions. The network should provide the basis for regional comparisons and detection of broader trends. The nucleus for this network should be developed through NOAA's NS&T Program and EPA's National Estuary Program.

NOAA Response: NOAA's Office of Oceanography and Marine Assessment has worked closely with EPA's Office of Marine and Estuarine Protection and its National Estuary Program for the past five years, and more recently, with EPA's Office of

Research and Development in the design of the coastal component of EPA's Environmental Monitoring and Assessment Program (EMAP). A joint EPA-NOAA working group for coordinating the coastal and estuarine environmental monitoring programs of the two agencies was established on October 16, 1989. To date, the work group has focussed on coordination of EPA's EMAP and NOAA's NS&T program for long-term monitoring. The goal of this interagency group is to develop a unified, national program for monitoring the status and trends of the environmental quality of the waters around the coasts of the United States. In the future, this work group may serve as a vehicle to address estuarine and regional monitoring activities that support management programs. Interim accomplishments include: (1) close coordination between NOAA's NS&T Program, operating in the field since 1984, and the marine monitoring component of EPA's EMAP, which will be initiated in June 1990 with a pilot project in the Virginian Province (Cape Cod to Norfolk, VA). The two programs will be measuring the same suite of toxic contaminants and will have complimentary placement of sampling sites; (2) NOAA has redirected several of its estuarine and coastal characterization studies to support requirements of EPA's EMAP and the Long Island Sound Estuary Program, including studies on sources and discharge levels of pollutants, bottom sediment mapping, and hypoxia/ eutrophication assessments; and (3) intensive, estuary-specific studies of cause-effect relationships are conducted jointly in some regions by EPA and NOAA. For example, joint studies of biological response to contaminants have been conducted in Long Island Sound since 1987, and this year will be expanded to include joint work in the Hudson-Raritan Estuary.

Recommendation #2: To facilitate establishment of effective, coordinated regional monitoring programs, new legal authority

or regulatory policies should be instituted, allowing some reallocation of compliance monitoring resources to regional status and trends monitoring.

NOAA Response: NOAA supports the intent of this recommendation, but does not conduct or fund compliance monitoring and can take no action related to this recommendation.

Recommendation #3: Other Federal and state monitoring programs should be strongly encouraged to participate in regional efforts by adopting compatible protocols that are consistent with their own missions and needs.

NOAA Response: Some progress has already been made in implementing this recommendation. The regional contaminant monitoring programs of the states of California and Maine are participating in NOAA's NS&T Quality Assurance program as are four EPA/EMAP laboratories. NOAA continues to solicit the involvement of other state and regional programs in its efforts.

Recommendation #4: Those responsible for managing estuaries under the EPA's National Estuary Program (NEP) should be required to develop and implement status and trends monitoring programs in the NEP estuaries. Regional monitoring should be designed as an integral part of the particular estuarine management strategy that is developed and meet minimum protocols to ensure coherence and compatibility with the national monitoring network.

NOAA Response: NOAA agrees with this recommendation and would assist NEP management boards in the design and development of status and trends monitoring programs compatible with the NOAA's NS&T network. The Long Island

Sound NEP already has such a relationship with the NS&T Program.

Recommendation #5: NOAA's NS&T Program, in concert with the coastal component of EPA's Environmental Monitoring and Assessment Program, should serve as the basis for the network component of the national program, through which regional programs can be linked and compared.

NOAA Response: The NOAA/NS&T Program and EPA/EMAP are working together now to establish a coordinated network. Regular coordination meetings are held at approximately monthly intervals to provide opportunities to exchange information, recommend new plans, and agree on joint actions. Meeting minutes are distributed to interested parties within EPA and NOAA. A NOAA/EPA Memorandum of Understanding for joint program activities is being drafted.

Recommendation #6: Federal funding for national status and trends monitoring should be significantly increased for the NS&T Program and NEP to provide incentives for development of regional programs, enhancing monitoring in areas not covered by regional programs, and supporting data management and interpretation activities.

NOAA Response: In FY 1990, the President sought increased funding in the amount of $850,000 for the NS&T Program through NOAA's Coastal Ocean Program initiative, but Congress did not appropriate the full amount requested. The President is requesting $2 million in FY 1991. In addition, during the last two years, the NS&T Program has adopted a modified sampling design that has decreased the cost per station and made funds available to expand geographic coverage of the sampling network.

Recommendation #7: The coordination of marine pollution research and monitoring programs among the Federal agencies as authorized in the 1978 National Ocean Pollution Research and Development and Monitoring Planning Act should be evaluated critically and necessary administrative and statutory changes should be implemented to improve definition of responsibilities, inter-agency coordination, and overall effectiveness.

NOAA Response: A Working Group on Monitoring Environmental Quality of Marine Ecosystems, established under the auspices of the National Ocean Pollution Policy Board, and co-chaired by NOAA and EPA is investigating strategies and mechanisms to improve coordination among Federal marine environmental quality monitoring programs.

Recommendation #8: NOAA should take the lead, in cooperation with EPA, in preparing a report to Congress every three years. It would synthesize the results of the national monitoring program, document the status of the coastal ocean, and evaluate management actions to protect and improve the health of the coastal ocean.

NOAA Response: NOAA currently prepares an annual "Report to Congress on Ocean Pollution, Monitoring, and Research" that summarizes the findings of its NS&T Program and related NOAA activities. This report currently does not fully satisfy the Marine Board's recommendation and a much expanded assessment and synthesis of the monitoring results from NS&T and other Federal, state and regional monitoring programs is needed.

Comments on S. 2247

I would now like to provide NOAA's comments on the provisions of S. 2247, the "Florida Keys National Marine Sanctuary and Protection Act." I am pleased to be here today to relay to the Committee the Administration's strong support for efforts to further the protection and management of the coral reefs off the Florida Keys. President Bush recently expressed how important he believed it was to protect these fragile reefs. While in the Florida Keys for Earth Day he said, "The Florida coral reefs are one of the most diverse ecosystems in the world and a unique national treasure. Protecting the reefs from damage, both from vessel groundings and pollution, is imperative."

I want to state clearly at the outset that the Administration opposes Congressional intervention into the marine sanctuary designation process. We believe that the current process of nomination, evaluation and designation works well and ensures that all points of view are considered. However, because Congress initiated the designation process for the Florida Keys when it passed the 1988 Amendments to Title III of the Marine Protection, Research, and Sanctuaries Act (MPRSA) and because the initial results of NOAA's site studies support designation, we do not oppose this particular intervention. We do oppose, however, any further Congressional intervention in the designation process.

NOAA concurs with the recognition of the unique nature of the marine environments adjacent to the Florida Keys, as stated in the findings of S. 2247. The Florida Keys and their surrounding waters form an extremely sensitive and valuable marine ecosystem. The coral reef ecosystem is a complex ecological network encompassing several closely interrelated terrestrial and aquatic habitats. The coral

reefs are the most well-known of these habitats and are vitally important to the economy of the area. The Florida Reef Tract is the third largest barrier reef system in the world and is unique in the coastal waters of the United States.

Coral reefs thrive within a very narrow range of environmental conditions and can be easily damaged by physical impacts, as was demonstrated by the groundings of three large commercial vessels off the Florida Keys in late 1989. S. 2247 provides a means of addressing the threat of large vessels running aground on the reefs. Nothing can guarantee that a large vessel will not run aground again, but the effect of this bill in deterring future groundings will be significant. Vessels will exercise more care in transitting the area and owners will be more diligent in assuring the mechanical condition of their vessels and the competence of their crews.

The bill also takes advantage of the comprehensive approach to the conservation and management of special areas of the marine environment found in the MPRSA. This ensures that the "Florida Keys National Marine Sanctuary" will address many of the resource management issues presently facing the Florida Keys. Human activities on the reef, such as chronic overuse, conflicts between different types of users, and incompatible activities, also are having a deleterious effect on the coral reef environment. While the sanctuary program alone cannot resolve all the resource management problems facing the Florida Keys, it could provide a large measure of added protection for the marine resources and complement state and local efforts. This additional protection would not be based solely on regulation and enforcement, but rather would incorporate: management measures, such as mooring buoys, to allow users to visit the

reefs without the risk of damage from anchoring; education to encourage the wise use of the marine environment; and research to monitor resource quality and predict the effects of continued use.

NOAA has many years of experience in the successful management of marine protected areas in the Florida Keys. Public perception of and appreciation for National Marine Sanctuaries there has never been higher. The existing Key Largo and Looe Key National Marine Sanctuaries have demonstrated the ecological and commercial benefits of preserving these areas for future generations. I believe that the multiple-use approach of the National Marine Sanctuary Program has been the key to ensuring resource protection while maintaining public enjoyment and use.

I will now provide specific comments on **S. 2247:**

SECTION 4(3) & SECTION 8. FEDERAL PROGRAM REVIEW.

NOAA recommends that these sections be deleted. As written, section 8 conflicts with the MPRSA's delegation of authority to the Secretary of Commerce to regulate activities, including Federal activities, within National Marine Sanctuaries. Although, pursuant to the MPRSA, the Secretary is not able to terminate any existing valid lease, permit, license, or right of subsistence use or access, the Secretary does have the authority under the MPRSA to review the exercise of proposed and existing leases, permits, licenses, or rights and subject them to regulation consistent with the purposes for which a sanctuary is designated. Sanctuary regulations also typically provide exemptions for defense activities critical to national security and for emergency situations. In the light of the expertise that NOAA has acquired in managing National Marine Sanctuaries, we

feel that, consistent with the MPRSA, the Secretary should retain the authority to regulate proposed and existing Federal activities within the proposed Florida Keys National Marine Sanctuary.

SECTION 5(b). AREA INCLUDED.

NOAA recommends that the 300-foot isobath be used to delineate the seaward extent of the proposed sanctuary boundary. This provides a sufficient buffer from vessel traffic to protect the reefs without creating either undue navigational restrictions or new hazards to shipping. The northernmost boundary should be the northern boundary of the Key Largo National Marine Sanctuary and the westernmost boundary should be Rebecca Shoal to eliminate any overlap with existing federally protected marine areas: Biscayne National Park and Fort Jefferson National Monument. We also recommend that the sanctuary boundary be defined on the Gulf of Mexico side of the Florida Keys by following the U.S. Coast Guard's proposed Area To Be Avoided (ATBA) boundary from Rebecca Shoal back to Key West and then defining the northern boundary by using the mean high-water line on the Atlantic side of the Keys and U.S. Route 1 bridges between the Keys as the landward boundary. Additional consideration should be given to expanding the jurisdiction of the Department of the Interior by extending the boundaries of Biscayne National Park to the 300-foot isobath. The sanctuary boundary should be defined by latitude and longitude and NOAA can provide those precise coordinates. Accordingly, section 5(b) could be modified as follows:

> "Section 5(b). AREA INCLUDED.--The area referred to in subsection (a) consists of all submerged lands and waters from the mean high-water line and the U.S. Route 1 bridges between the Keys seaward to the seaward boundary of the 300 foot isobath and bounded by the following coordinates: [latitudinal and longitudinal coordinates to be added]."

SECTION 5(d). BOUNDARY EXTENSIONS.

This section is in conflict with section 7(a)(7), that speaks of "minor modifications" to the sanctuary boundary, and should be clarified. Boundary modifications could include reductions as well as extensions.

SECTION 6(a)(1). COMMERCIAL VESSEL TRAFFIC.

The statutory prohibitions should include a prohibition against the infliction of resource damage by any vessel to ensure that any vessel that ran aground prior to the promulgation of regulations would be liable for penalties. Additionally, the statutory class of vessels, prohibited from operating within the sanctuary boundaries should be clarified and expanded. To address these concerns we recommend that the following language be substituted for section 6(a)(1) and an additional subsection added to section 6(a) to define "prohibited vessel":

(a) VESSEL TRAFFIC

(1) IN GENERAL -- It is unlawful for any person

(A) to operate any prohibited vessel within the boundary of the Sanctuary; or

(B) to destroy, injure, harmfully disturb, break, cut or damage any coral, marine invertebrate, plant, soil, rock or other sanctuary resource as defined by section 302(8) of the MPRSA within the boundaries of the Sanctuary by means of any vessel."

To correspond with the Coast Guard's proposed ATBA, NOAA recommends that the prohibited class of vessels at a minimum include any U.S. or foreign flag vessel (except those engaged in innocent passage) measuring 50 meters in length or

more, or any U.S. or foreign flag vessel (except those engaged in innocent passage) or barge carrying dangerous, hazardous, combustible or flammable materials for hire. Since this prohibited class of vessels could prove inadequate in the future to protect the reef, another subsection should be added to section 6(a) to allow the Secretary of Commerce with the concurrence of the Coast Guard, to further restrict the size or type of vessel allowed to operate in the sanctuary as part of the process of promulgating regulations to implement provisions of the Management Plan, or as subsequent amendments to these regulations.

SECTION 7(a)&(b). PREPARATION OF PLAN.

We agree with the approach taken by the bill to designate the proposed area as a National Marine Sanctuary and direct the Secretary of Commerce to promulgate regulations consistent with his authority under the MPRSA to administer National Marine Sanctuaries. This would simplify the sanctuary designation process. Shortening the designation process in this manner would not circumvent the spirit of public involvement in the process articulated in the MPRSA, which includes public hearings and numerous opportunities for public input. Under the National Environmental Policy Act and the Administrative Procedure Act, NOAA would still be required to conduct environmental analyses, publish draft regulations and seek public comments. However, the bill should specifically define the procedures in section 304 of the MPRSA that are to be followed in developing the plan and regulations for the sanctuary. As written, there is some uncertainty regarding the requirement for certain elements such as the Congressional Prospectus and the Resource Assessment Report. Regarding section 7(a)(10), the bill should specify that, pending the promulgation of regulations and a management plan for the entire Sanctuary,

the existing Key Largo and Looe Key National Marine Sanctuaries would continue in their present protected status.

SECTION 9(a). CIVIL PENALTIES AND ENFORCEMENT.

Section 9(a) should also reference section 305 of the MPRSA, that describes the application of regulations to persons who are not citizens of the United States. Additionally, the bill should be revised to provide for enforcement actions against violations not only of the Act but also of any regulations promulgated or permits issued pursuant to the Act. To address these concerns NOAA recommends that the following language be substituted for section 9:

SECTION 9. PENALTIES AND ENFORCEMENT
(a) Civil Penalties and Enforcement. Any person subject to the jurisdiction of the United States who violates this Act or any regulation or permit issued thereunder shall be liable to the United States for civil penalties under section 307 of the MPRSA of 1972 (16 U.S.C. § 1437) any vessel used for such a violation shall be liable in rem for civil penalties and subject to the seizure and forfeiture provisions of section 307.

(b) The Secretary shall enforce this Act under sections 305 and 307 of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. § 1437).

In addition, the maximum penalty for violations by vessels within the prohibited class should be increased to $250,000 per day. The current maximum of $50,000 is inadequate in major groundings. Large vessels that enter the sanctuary and run aground have the potential for inflicting massive damage. Although such vessels would be liable for

damages to sanctuary resources under section 312 of the MPRSA, proof of damages is likely to be a very contentious matter. Since no such proof problems exist with penalties, NOAA would be in a better litigation posture if it had significant penalties it could assess in major groundings. In addition, the higher amount would have significantly more deterrence value.

NOAA recommends that the following language be added to section 9 to clarify that the Secretary of Commerce has authority to regulate and enforce this Act under a territorial sea regime to the extent of the U.S. 12-mile territorial sea:

"For the purposes of implementing and enforcing this Act and regulations promulgated thereunder, the U.S. territorial sea extends to 12 nautical miles from the baselines of the United States determined in accordance with international law."

SECTION 10

NOAA further recommends that section 10 be revised to specifically address liability for injury to natural resources and that an additional section 11 be added to include the language previously included in the unrevised section 10.

SECTION 10. DESTRUCTION OF LOSS OF, OR INJURY TO, SANCTUARY RESOURCES.

(a) Liability in General. Any person who destroys, causes the loss of, or injures any sanctuary resource is subject to liability to the United States pursuant to sections 302 and 312 of the MPRSA of 1972 (16 U.S.C. §§ 1432, 1443) for response costs and damages resulting from such destruction, loss or injury.

(b) Liability in Rem. Any vessel used to destroy, cause the loss of, or injure any sanctuary resource shall be liable in rem pursuant to sections 302 and 312 of the Marine Protection Research and Sanctuaries Act of 1972 (16 U.S.C. §§ 1432, 1443) for response costs and damages resulting from such destruction, loss or injury.

Conclusion

In conclusion, we believe that the coral reefs off the Florida Keys merit the additional protection that Senator Graham's bill would provide. The Administration is committed to the conservation and sound effective management of this valuable area in conjunction with state and local governments. We look forward to working with the Committee in ensuring the preservation of one of our Nation's most unique treasures.

Let me say again how proud I am to be part of the expanded role for NOAA represented in our FY 1991 budget. President Bush and Secretary Mosbacher are committed to preparing for the environmental challenges that face us in coming years. Increased funding and new directions in our coastal and ocean programs will put NOAA in the vanguard for ocean science and management as we approach the 21st century.

Thank you, Mr. Chairman. I'd be happy to answer any questions you might have.

Senator KERRY. Thank you very much, doctor.

Dr. Knauss, I am not alone, I know, in expressing an increasing concern about the number of oil spills that we are having to deal with. The oil spill legislation, which we have been really hoping we could break loose and get out of here soon, is not going to have that much effect in the short-term, but over the long run I think is going to have a significant impact. I hope that these recent spills will energize some people to try to move to break that legislation out of the conference and get it moving. Most recently the *Mega Borg* spill in the Gulf of Mexico, and the *Bermuda Star* in Buzzard's Bay, and the BT *Nautilus* in New Jersey all bring home to us your role in this process and the importance of it.

The damage report that you have done on the *Exxon Valdez* spill I think is an excellent piece of work and I commend you for it. Let me ask you this: is NOAA doing a similar damage assessment and monitoring at all of the spills that I have just mentioned?

Dr. KNAUSS. We certainly are involved at this particular point with the initial concern, because the oil is still coming out. We are the group that are the primary advisors to the Coast Guard who have the clean-up responsibility, and it is our people who advise the Coast Guard as to what needs to be done and what should be done, and where the oil is likely to go and what the circumstances are. Where should the booms be put, if it is going to come ashore, where are the areas that need to be most protected—this kind of thing—and we are doing that in the Gulf. We are doing it, or at least we're doing that up at Cape Cod, and also in New Jersey.

This is, I will not say routine, because it is never routine, but this is an integral part of our responsibility. Yes, we will also be responsible for an assessment over the long-term, but that is an effort which goes on somewhat simultaneously but certainly goes on continually afterwards, after the initial spill is taken care of, sir.

Senator KERRY. Now, do you have adequate personnel to be able to cover this number of spills?

Dr. KNAUSS. When we have three spills simultaneously we are very, very short. We stretch our people very thin. Perhaps Dr. Robertson who is the expert on this can tell me exactly how many people we have on these various spills and how many people we have left?

Dr. ROBERTSON. Well, we have 11 people right now, down on the *Mega Borg*. There would only be one or two on the others, but we still have a number of people up in Alaska with the damage assessment and restoration work up there, and yes, when there is more than one spill at a time many of us have to double up to be involved in this. We have to go out broadly and get people from a number of different activities, but we are always able to cover the spills.

Senator KERRY. Do you feel you are adequately covering the spill in Massachusetts right now?

Dr. ROBERTSON. I believe we are, yes, sir.

Senator KERRY. How many people do you have up there?

Dr. ROBERTSON. I think there is only one up there as far as I know.

Senator KERRY. That one person will adequately be able to deal with that?

Dr. ROBERTSON. At the magnitude of it right now, I believe so.

Senator KERRY. What about in Texas?

Dr. ROBERTSON. As I say, there are 11 people down there and there will be more going as needed. We feel that we are adequately covering it.

Senator KERRY. Can you give us any preliminary information on the findings at this point in time from the Buzzard's Bay spill, and a preliminary assessment?

Dr. ROBERTSON. No, I have no knowledge on that. We could answer that for you for the record.

Senator KERRY. Do you, Dr. Knauss?

Dr. KNAUSS. No, sir. We will get that information for you, but we do get routinely. Of course, nothing is routine in this business, but we do get in from the field statements each day as to where we stand with respect to these spills. Most of our activities, at least in

the last few days, have been with respect to the concern about what is happening in Galveston. I do not have detailed information at this point with respect to the situation on the *Bermuda Star.*

Senator KERRY. Well, I would appreciate—you say you get a daily report?

Dr. KNAUSS. We do get a daily report.

Senator KERRY. Who gets the report?

Dr. ROBERTSON. It is actually on what we call a hot line, and it is an internal NOAA computer network, and the Director of the Office of Oceanography and Marine Assessment certainly gets it, but it is generally available to the people who work in this network so we can all keep track of it.

Senator KERRY. The thing I am concerned about—I mean, how hot is the hot line? Who gets the hot line?

Dr. ROBERTSON. The people that are on the hot line are part of a network of the people that respond to spills up to the head of—the Director of the Office of Oceanography and Marine Assessment. If it is a hot spill as the *Valdez* certainly was last year, then each day those are passed on to higher management, and they can be available at any time.

Senator KERRY. Well, the front page of one of our newspapers, or I think both of our newspapers in Boston, had pictures of soiled beaches and rocks and so forth covered with oil. I am just curious, is that not prompting sort of day-to-day follow-up.

Dr. ROBERTSON. Those spills are on the hot line, yes. I am sorry I have not pulled it off today, and I do not have an up-date with me right now.

Senator KERRY. Would it be possible for you today to get me that assessment?

Dr. ROBERTSON. Yes.

Senator KERRY. Of what your assessment is of that particular spill, perhaps by early afternoon or something?

Dr. KNAUSS. I think we can find that, absolutely, Senator.

Senator KERRY. I would appreciate that.

You have requested an increase of $11 million for the Coastal Ocean Science program. At the same time, the budget request shows a $40 million reduction in ocean and Great Lakes research as well as reductions of several millions for some of the fisheries research activities. What is the rationale that would convince the Committee that we ought to fund this new program to the tune of $11 million while we are cutting already-stated priorities of Congress by some $40 million?

Dr. KNAUSS. In my judgment, Senator, one of the greatest concerns we have is truly understanding the processes that take place in the coastal zone that will allow us to make the kinds of decisions that state and federal managers and others have to make in order to determine what regulations they should have, how one should go about coastal zone management, these kinds of things.

I am deeply concerned that it is not enough to monitor the ocean, that we must understand the processes that take place in the ocean. As I said before, this Coastal Ocean program is indeed a NOAA-wide program. It is not limited to specific programs such as our Status and Trends, which is our monitoring program. It is not limited to the Coastal Zone management program, which is a com-

bination. It is a program where we work with the states so the states can manage their coastal zones. It is not a specific fisheries program that deals with fisheries management, and in terms of monitoring stocks and these kinds of things.

It is a program which cuts across all aspects of NOAA's responsibilities and it allows us to look at what we believe are the critical science issues, the critical knowledge issues that we need. Much of that money goes to such things as fisheries, to Status and Trends programs, to Coastal Zone Management, to our Sea Grant program, so it is not essentially a new program.

If you want to think of this almost as an umbrella program, where at least I as the Administrator have an opportunity to decide where I think we need essentially to build up our expertise in these areas. For example, about $2 million of the Coastal Ocean program is earmarked for the Status and Trends program. Other funds, as we work through what our needs are, are earmarked for other programs.

Senator KERRY. Well, how much is it receiving currently, that program?

Dr. KNAUSS. $6 million.

Senator KERRY. So in effect it is—I mean, not in effect. I mean, it is a 200 percent increase, almost.

Dr. KNAUSS. That is right, sir.

Senator KERRY. I want to understand. What is there that says the program ought to get a 200 percent increase while, again, if the money is really going to these other things, why does it not go to those other things? I think there is an uncertainty there that I am just trying to get a handle on.

Dr. KNAUSS. I understand your concern. As I say, it is a NOAA-wide program. It does address what I believe are all of my responsibilities in NOAA with respect to these Coastal Ocean programs. It has a heavy emphasis on increasing our understanding of these processes as distinguished from essentially management responsibilities or monitoring responsibilities. I am deeply concerned that we do not understand these processes.

Senator KERRY. Well, the major cuts, though, are in research. I mean, a $40 million cut in research in the Great Lakes and ocean research and in fisheries research, the money you are getting is actually a combination of research and operational, but it is coming out of research.

Dr. KNAUSS. Many of those research programs are finely-focused programs. Many of these research programs, particularly in the fisheries program, have been put in because of at least—in fact, over a period of many years there was a lack of support within the Administration for our fisheries program, and so Congressmen and Senators such as yourself put in a specific program to look at a specific fisheries, and so we have a lot of those kinds of programs. This program has less focus, sir.

Senator KERRY. I understand this is really a way of getting away from the Congress' focus. I mean, that is exactly the point. Congress has said we would like to do these things, and now you are saying well, I really want more discretion, and so you are going to cut $40 million and add $11 million and wind up with a significant amount of discretion.

Dr. KNAUSS. There is some of that, yes, sir.

Senator KERRY. Well, can you share with us a more specific criticism or analysis of the specific focus that you object to?

Dr. KNAUSS. It is not so much that I object to the specific focus, sir. None of these programs have as much money in them as my managers think they should have in them. I think that is very clear. I cannot imagine any manager of any program who is ever sufficiently satisfied that he has enough funds to do the job he thinks he is given the responsibility to do given the limited funds we have.

I have to make some decisions with respect to where I think the additional funds should be placed. It is a NOAA-wide program. Managers from within the entire NOAA program sit as a board of advisors to Dr. Scavia, who runs this program. We also have an outside advisory group that helps him with respect to those decisions, so it is not a question of asking, is there money that is not well-spent by what Congress says should go in there? It is the fact that we do not have enough money. We will never have enough money to do all the things we need to do, and I have to make the decisions, or somebody has to make the decisions with respect to where do I think, where does my advisory committee think, where does the NOAA-wide community think, those moneys should be put?

Senator KERRY. Well, I think it might be good if we try to spend some time, or our staffs spend some time, so that we do not run headlong into each other here with some congressionally-expressed priorities versus yours. I think we ought to try to analyze where some of that is going to come from and understand better what the specific impact is going to be on some projects that have been nurtured by the Congress very carefully.

I know I do not need to remind you the last few years have been painful, painful years in the budgeting process for NOAA, and it cannot be said that the Congress has been overly generous. We have been struggling to keep things alive, and I think that given the attitude of the Reagan Administration over the years towards this budget, we have done about as well as we could do to keep the priorities moving forward, and so I really want to have a better definition of that.

Dr. KNAUSS. I understand, Senator. One of the concerns expressed by some people is the fact that our Status and Trends program, which is a very important program, is not sufficiently well-funded. There is additional money in our Status and Trends program this year, and there is more money for it in next year's budget. There is no question but what that program could take even more money, because there is an extraordinary amount of effort and work that needs to be done in that area.

We have essentially designated something on the order of $2 million in additional money from the Coastal Ocean program for that program, but I was not prepared, and our advisory group was not prepared, to say that all of it should go to that effort. There are other areas where we think we need funding also, if we are going to do the total job that Congress has assigned to us, sir, and I will have my staff work with yours so that there is better understanding.

Senator KERRY. Let me just ask a couple more questions. I have a number more, but I do not want to monopolize this, and I want to let Senator Stevens proceed. But one of the primary objectives of the Coastal Ocean Science program is to evaluate information in order to assist in the environmental decision-making process, and much of that decision-making process obviously takes place at both the state and local level.

NOAA's programs that are responsible for the management of the Nation's Coastal Zone to many people do not appear to be involved in the Coastal Ocean Science program. There does not seem to be linkage there between the information and evaluation and the state management decision-making process. Can you speak to that question on the level of that involvement?

Dr. KNAUSS. Well, I think I had better turn that over to Dr. Scavia. I thought there was pretty good linkage, but perhaps he can answer that better than I can, sir.

Dr. SCAVIA. It is important that we establish priorities and requirements of the Coastal Science program that satisfy the needs of those kinds of decision-makers, the state coastal managers—one of the important segments of decision-makers that we have to address.

One of the things that we are doing this year is working with the Office of Ocean and Coastal and Resource Management in NOAA to establish a series of workshops that will bring those state resource managers to the table and ask them specifically what kinds of information they need and what improvements in information they need in order to make better decisions. That kind of information will help shape the Coastal Ocean Science program this year and on into the future. That is one area.

Another area that we are working with is establishing two external advisory boards for the Coastal Ocean Science program. One is through the National Academy of Sciences to look over the science part of the program, but a second advisory board, that is an external user advisory board State coastal resource managers and members of the regional fishery management councils will be represented on that board, as will other agencies like the Environmental Protection Agency, FEMA, and other parts of the Federal Government that require the kinds of information that the Coastal Science program is designed to improve. That advisory board will be advising me and my council and ultimately Dr. Knauss as to whether or not the science being developed in the program is in fact addressing the needs of that community.

Senator KERRY. Well, are you satisfied that there is an adequate exchange of information and that there is a linkage between the decision-making and the Coastal Science program?

Dr. SCAVIA. First, I recognize that there was not a very good linkage until very recently. That linkage is now not only becoming more evident, but becoming formalized. I think we are about halfway to where we ought to be in creating that linkage.

Senator KERRY. Well, I appreciate your acknowledgement of the problem, and obviously we would like to see if we can speed up the process, because I think it is critical to have that linkage.

Let me, before I turn you over to Senator Stevens, just say that from a parochial perspective—and I want to be parochial for a

minute—I am not going to say that one person is inadequate, because I do not know with respect to the coverage up in Massachusetts, but what I do know is that vessel is sitting there with 100,000 gallons of oil still in it, and the only thing keeping it in is the sea water. There is a plan for how to patch it up and so forth, but I really would like to be certain—and maybe you would evaluate this before you get back to me this afternoon—that your linkage with the Coast Guard plan and the evaluation of some of the endangered species and so forth are going to be adequately cared for in this approach here. I just really want to make certain of that.

Dr. ROBERTSON. Senator, let me add, however, that our one person there is a little misleading in that he is linked into a very sophisticated computer network, and—for example, you talk about the sensitive species. We have done sensitivity mapping of the entire coastline of the United States, including the Great Lakes, and he has that information, as an example, at his fingertips.

He has modeling capabilities of where this oil is going to go, and if he needs the experts that developed this information, they can either be reached by telephone or they can be flown out and often are when that information is needed, and so it is not one person showing up and trying to cover the whole thing.

We have, because of this—we have been at it so long we really have a very sophisticated network.

Senator KERRY. I understand. That is why I said that I am not saying one person is, per se, inadequate at all. I simply want to hear from you and understand precisely what your evaluation is so that there is no gap here in terms of the accountability process. That is all I am asking for, and it may well be that everything is in tip-top shape.

Senator Stevens.

Senator STEVENS. Thank you, Mr. Chairman.

Dr. Knauss, we have these drift net agreements now with Japan and Korea and Taiwan, 100 percent coverage on those vessels for transmitters. I spoke to you about that the other day, when you appeared before our Committee.

I am now informed that these transmitter units could be equipped to carry additional data to the satellite that will pick up their data. They could have data not only to identify the vessel's designation, its international means of identification, but also its location. But it could give you some additional information such as water temperature and air temperature in the same transmission.

Have your people looked into the capability of these transmitter units? In other words, are we going to just require a position locator? Or are we really going to get additional information out of those transmitters?

Dr. KNAUSS. To answer your first question, Senator, there is no question that those transmitters could, indeed, transmit an extraordinary amount of additional information. In fact, these devices are used on oceanographic instruments all over the world by NOAA as well as other researchers.

Senator STEVENS. As I remember we had that situation where we tried to put those permanent or semi-drifting sonabuoys out in the Pacific. We could not get the funding for it, and that is what I am

looking for. Why not use these transmitters as the sources for the information we sought in the past?

Dr. KNAUSS. Well, I guess off the top of my head, I can think of two reasons why, one of which is that it would be necessary to have the instruments which would then be essentially programmed to feed into those transmitters. And that increases the expense of those transmitters considerably.

Senator STEVENS. That is what I am getting to, because I would like to see you get us some information about what it would cost. I would be willing to go forward here and try to get funding so that you can get more data. I think it is data we can share with other governments and with the world, with—your atmosphere people must want that information too. But beyond that, I would like to have it to verify the location data that is coming in.

We believe that these transmitters could be altered fairly easily, if they are not transmitters that are our design so that we know when they have been tampered with. So if you could get transmitters that had a multiple purpose, and we could prevent them from being tampered with, we would then have accurate position and identification data. Otherwise, we think that we are not going to get it.

Now, have your people examined that potential?

Dr. KNAUSS. I am not aware that they have. I will look into it, Senator. You must remember that in order to get these transmitters on foreign fishing vessels we needed an international agreement. I suspect that—although I do not think it should be very difficult—if we were going to try to get these transmitters to provide additional information over and above what has been agreed to by the State Department and the foreign offices of these other governments, we will have to go back and renegotiate.

I am not saying that cannot be done. In fact, that can be done. But it probably is not going to happen next week or next month.

Senator STEVENS. I understand that.

Dr. KNAUSS. I will look into the issue, sir.

Senator STEVENS. We are dealing with fishing groups that are willing to use North Korean flags and hide their international identification numbers. When we send surveillance planes over them they use all sorts of devices and subterfuges in order to hide their whereabouts or their identity.

I do not know why just putting a transmitter on them is going to mean that we are going to trust the signal we are getting from them, unless, we know the kind of transmitter that is there, and we can interpret from other data whether the transmitter has been tampered with. That is our goal, and I would hope that you would be willing to pursue that.

I do not think it would cost much additional money to make certain that the transmitters did have other data which would also demonstrate that it had been tampered with, if they attempted to tamper with their location or identification signal.

Dr. KNAUSS. I understand what you are saying. I will look into it, sir.

Senator STEVENS. Thank you.

Now, I understand you are going to move the *Murray* out of Auke Bay. And I, too, get a little provincial here at times, Mr.

Chairman; I admit it. But we have half the coastline of the United States, and that is the last vessel of NOAA in Alaska, and they tell you are going to move it out.

Dr. KNAUSS. We are replacing it, sir.

Senator STEVENS. You are replacing it, but you are replacing it with a vessel that has seen service in the South Pacific and is stationed in Seattle.

Dr. KNAUSS. It is my understanding, Senator, that it will provide comparable kinds of information in the area of Alaska.

Senator STEVENS. Well, it will when it is there. But if it is going to spend half its life running back and forth to Seattle or to the South Pacific, it is not going to do much good to keep track of oil spills and other things in my State.

Dr. KNAUSS. If it is not providing comparable information, I have been misinformed, and I will look into it.

Senator STEVENS. Well, I wish you would. I can understand why it has to be modernized. We would hope that those vessels would be modernized. When I came here, there were three vessels in Alaska, and one by one they have been taken to be replaced and then stationed somewhere else. And we do not see them in Alaska. Each time I have been told, now, do not worry, Senator, they are just going down there, they are going to be coming up. And they come up for the salmon season and go back with the fish, but they do not stay year-round. And that disturbs me greatly.

I think I have a right to be disturbed too, Mr. Chairman. We have the areas of substantial conflict among ocean users. We have the large foreign fishing fleets, our own fishing fleets, all these cruise boats, the various interests that are using the North Pacific—I am including these enormous oil tankers—I think we have to have the monitoring capability of NOAA present. And I hope you will review that.

You have, as you have indicated, a four-fold increase in the climate global change budget, $87 million. But I understand only $21 million of the $87 million is going to ocean-related programs?

Dr. KNAUSS. Well, directly to ocean-related programs. A lot of that effort goes into, essentially, data analysis and data management, which we call data development. Much of that is oceans. So in some sense it is an underestimate. There is no question but what it is less than half.

Senator STEVENS. Well, five of us on this Committee are at two ends of the congressional supermarket. We are also on the Appropriations Committee. I hope I do not have to wait until the Appropriations Committee to ask for the details of what is going to happen to the $87 million. I think that ought to be in the authorization data, and it is not.

I believe you ought to give us a little bit more detail here in this Authorization Committee as to where you intend to spend the money, if we not only authorize it, but really support the appropriations also. It is the members of this Committee and the Appropriations Committee that carry on the support for the ocean programs.

Dr. KNAUSS. I understand. I was not aware that that information was not provided for you. It will be provided. We certainly have

that information, and there is no reason why it cannot be provided. It will be provided.

Senator STEVENS. There is $10.2 million in this authorization request for what is called mission-focused fishery programs. What is a mission-focused fishery program?

Dr. KNAUSS. Mission-focused fisheries programs are programs with respect to specific fisheries, such as your salmon fisheries or such as the rock fishery or something of this nature. A mission focused—with respect to a specific fishery, as distinguished from a more generic effort, looking at, say, habitat, preservations, these kinds of things, sir.

Senator STEVENS. I do not want to prolong you here, but would you get us something for the record, so we can further understand that?

Dr. KNAUSS. Absolutely.

Senator STEVENS. We have very little funding in the budget, your budget, that is dedicated to fisheries programs, period. And if this is a—if mission focused means something other than monitoring commercial fishing or sports fishing operations, we would sort of like to know that.

Your testimony that you have here today and the documents we have gotten so far indicate that you want to use the satellite remote sensing and the aerial photography funds to map and monitor change in the wetlands acreage of the coastal zone, which we applaud. I think we all want to know that. But I was surprised when we got to this wetlands review that NOAA does not know the exact number of coastal wetlands in each state.

After all of this long period of review of wetlands, why do we not know how many wetlands—how many acres of each state are classified as wetlands?

Dr. KNAUSS. That is a question I have asked also. I do not know the answer.

Senator STEVENS. Well, I would hope that you would give us some information as to when we would be able to identify them. I mean, I come from——

Dr. KNAUSS. Excuse me, Senator. Maybe I misspoke.

Dr. ROBERTSON. We do have a good deal of information that was gathered about 10 years ago based on aerial mapping, work done by the Department of the Interior, and we have taken that information and have digitized and tried to obtain the amount of wetland in the different states.

What we do not have is an update of that. It is changing, and it is an expensive and difficult process. So we do have the information on it, but it is about 10 years old.

Senator STEVENS. Well, could you give us for the record what you are talking about in terms of money to pursue that? I think this is one of the most important programs in the country. I support the concept of no net loss of wetlands. But I am disturbed that once again the place where the greatest impact from enforcement of this policy is going to be in my state, which is 100 percent wetlands below 2,000 feet, whereas the policy is really needed in the areas where they have already used most of their wetlands. Only .05 percent of the wetlands in Alaska have been used.

In areas where they have used 50 percent and 60 percent and 70 percent of the wetlands, they claim not to know which are wetlands, so that they are not really putting the attention to the places where the utilization of wetlands has been serious. And the destruction of wetlands is a national problem. They are saying, you, Alaska, just stay undeveloped. You cannot use any of yours.

Now we cannot even find out which lands in Alaska have been classified as wetlands. They have just classified all of them as wetlands. And they would be wetlands if someone melted the ice, but I do not think they are wetlands as they stand in most areas now. And our job is to try and find out what is wetlands and what is not.

I think this would be something that would be very important to this Committee. Do you need more money? Do you need authorization? What do you need to really classify wetlands? That we thought this was your job, Dr. Knauss, not the EPA and not the Corps of Engineers. You were supposed to classify the wetlands, and they had programs to help protect them. But the classification was supposed to be your job. And we find that that has not been done.

Dr. KNAUSS. May I ask Dr. Scavia to speak a little bit on the subject also, sir?

Dr. SCAVIA. One of the issues at hand is establishing the amount of wetlands now. As Andy Robertson just said, we have got an inventory that is 10 years old. We are trying to put in place a modern technology to assess how much exists now, using satellite imagery.

One of the problems in accumulating that information across states is that each state is defining wetlands a little bit differently. So one of the things we are doing is trying to establish a national protocol for definition of wetlands. And also, there is close to $1 million in the coastal ocean science request this year to deal specifically with using that new technology to map and to assess the extent of wetlands.

In addition to that, though, just knowing how much wetland there is acre-by-acre is not going to solve the problems that we have. We can lose the function of wetlands without losing acreage, and we lose the function by contaminating with toxics or by altering the fresh-water flow through that system or by contaminating it in other ways.

Senator STEVENS. That is all well and good, and I appreciate what you are saying. We have got a 10-year-old study that has been looked at, and it tells people that everything in my state is wetlands.

Now, we just happen to be a new state, we got 105 million acres of public land for development when we became a state 30-plus years ago. Our natives have had their claim settled. They got 40-plus million acres in lieu of money from the Federal Government for the lands that had been taken from them. They were not restored, necessarily, the lands were taken from them.

And now we have, and as I say, everyone agrees that .05 percent of all the lands in Alaska have been developed. But now we have people telling us, no, you cannot develop those lands; if you do develop them you must go out and reach out and get some lands that

have already been developed and restore them to their natural condition.

That is the no net loss concept. And when I ask what is happening in other areas, I am told, well, we do not know how many have been lost down there; we are studying that. Now, I want a national policy. I support the no net loss concept, but I also support an intelligent application of it to all areas of the country, including mine.

And what you are saying is, I agree, I think that there are other actions, contaminants and other actions, that lose the value of wetlands. But we are going into a period, I think, with some real contention. We need accurate statistics. I would like to see you take that 10-year-old study and give us a comparable study, so we are dealing with apples and apples and not apples and oranges.

What has been used in 10 years? How bad has the loss been? Where has it taken place? What programs should we have from the point of view of the coastal zone management people? Otherwise, we are going to get it from the Corps of Engineers and from EPA, and they have got other fish to fry, you know? We are supposed to be protecting the coastal zone. I would hope that the protection of the coastal zone is first and foremost in this whole program.

That is what we thought we were doing, when you were on the Stratton Commission, Dr. Knauss, when I was roaming around these halls then, too. I really think that the problem is, is that we have dropped the ball. We have not given you the funds to do it and the authority to do what you should have done to pursue the Stratton Report which still, in my opinion, is the leading document for coastal zone protection.

Now, I hope that this Chairman will join, but, I think this Committee needs to know, do you have any lack of authority? Do you have any lack of funds? What kind of money would it take to bring this study of yours up to date so we can all rely upon one totally partial—I want you to be partial in protecting the coastal zone. What needs to be done in the wetlands to protect the coastal zone? And if you can give us that study, we ought to get you the funds to pursue it.

Dr. KNAUSS. Senator, I will have my staff put together a brief summary of where we are with respect to updating this 10-year-old study, addressing the issues which Dr. Scavia pointed out. Sometimes it is an apples and oranges comparison. You go from state to state with respect to how wetlands are defined, what we are doing to resolve that issue, and how we are using modern technology to do it. More importantly, we need to examine how long it will take to complete this effort, because we are trying it on a pilot basis in one small area this year to see whether we succeed and, assuming we can solve the problem in one small area, how long it will take to expand that effort, so we can do it nationwide. I will provide you with that information very quickly.

Senator STEVENS. There is one last word for the Chairman, and I will yield to him on this. But my statewide Chamber of Commerce and legislature from my state asked us to seek exemption from the no net loss policy for Alaska.

Now, I have refused to do that. We have got to be part of this program when it starts, because eventually it is going to come to Alaska any way. But we want it to be applied to us fairly, based

upon our history of use and fairly to every other area of the country based on their history of use of the coastal zone. And we cannot do that, unless we get a modern, up-to-date statistical base of the coastal zone, and what has been done to it.

Now, this to me I think is first and foremost of all of your goals right now, Doctor, ought to be to bring that up to date, because that is a national controversy that is coming at us like a pair of freight trains going 1,000 miles an hour, direct collision coming in the whole country on wetlands, in my opinion.

Senator KERRY. I concur heartily. I absolutely agree. The Senator and I are trying to iron this out with respect to the Coastal Zone Management Act right now. And Alaska has a particular problem, and I am very, very sympathetic to the developmental inequity and the problem of classification in Alaska. And I think we have to work to do this.

I would like to ask you, Dr. Knauss—I mean, give us something finite about when we could expect this. Because we are trying to move pretty rapidly on this CZMA Act, and it is not something we want to sit around and wait for.

Dr. KNAUSS. Do you mean how soon you can get a report?

Senator KERRY. How soon do you think we could get this kind of assessment that you just promised Senator Stevens?

Dr. KNAUSS. I think I can provide you an assessment of what we are doing, what the problem is, and how long it will take us to get there within a week.

Senator KERRY. Okay.

Senator STEVENS. Good.

Senator KERRY. That would be very, very helpful. And I think also, you know, I think you folks should not be wrestling too hard with the question of a national definition on wetlands. I mean, some states may be using it as a way of avoiding any responsibilities with respect to the issue. But I think that you ought to settle on a definition, and we will deal with it. Is that doable? Am I wrong?

Dr. KNAUSS. I am not sure, sir. Litigation can get very complicated with respect to no-net-loss of wetlands. We will do the best we can.

Senator KERRY. I understand that. But we are going to have to decide in a sense what is going to be our national policy with respect to this.

Senator STEVENS. We thought we had defined it before on a national basis. Mr. Chairman, I really think this is part of the problem. We should assert the federal jurisdiction to define wetlands. If there is going to be a national policy applied to each state, there must be a national definition that is fair to each state.

Dr. KNAUSS. I am told that if we actually use remote sensing techniques that it would be very difficult to vary it state by state. And so, we may, have a common definition ipso facto by the technology we use. It may not be a legal definition.

Senator STEVENS. I will be quick, Mr. Chairman, unless you——

Senator KERRY. No, no, that is fine.

Senator STEVENS. Your on-site activities after an oil spill, I think, are excellent. Everyone who has dealt with *Exxon Valdez* spill will tell you one thing, Dr. Knauss, you were very well represented, the

Nation was well represented through the NOAA scientists that participated.

The thing that bothers me now is, I am not sure that you are incorporating into your work what your people are doing—some of these studies that NOAA has financed in the past, for instance, the oceanography studies that were done at the University of Alaska by Dr. Royer, I was surprised to find out that the Coast Guard and others had no knowledge that they had been done.

I would hope we would find some way to use the forecasting of spill trajectories, the ocean currents, the projected target of spills, if they occur. That was not cranked into our post-spill activities for at least, three weeks, four weeks after the spill took place. That, I think, ought not to happen, Dr. Knauss.

Can you tell us—when they have a spill in New England, we ought to be able to tell them like that, where the current is going to go, what the prevailing target is going to be for that oil. We should not have to be all getting together and having a meeting.

Dr. KNAUSS. We do, indeed, have ways of estimating trajectories in all of these areas, sir, and that is one of the things that we work very hard at doing and being able to do as quickly as we can. We were certainly able to do it in the Gulf of Mexico.

We seldom have as detailed information with respect to the currents around Massachusetts Bay, as one would like, but we have some information.

We build that into our models, we run those models immediately, and we then send people up there to continue to update those models with additional information as we can. And so this is computerized; it is automatic. And we are continuing to improve the system.

We are, as you pointed out, very proud of what we can do on that. We are very proud of our response. It is a finite world, and we sometimes do a better job in some areas than others, because of the information that is available ahead of time. But we do indeed have generic models, which we can run anywhere in the United States or anywhere in the world.

Senator STEVENS. Let me just as an aside to my two colleagues here, when I was flying back—I was on vacation, actually, when this accident happened. It was the Easter period. And I happened to get on a plane with Dr. Tom Royer of the University of Alaska that had used NOAA monies to track with satellites the buoys that have been dropped in the Pacific coming into Prince William Sound and the course of the currents exiting Prince William Sound. He sat down, I moved over to his seat and he drew me a map of what was going to happen to the oil if it was not stopped.

And it surprised me, because it was going to go southwest along the Aleutian Chain and then turn north and go up into the Bering Sea and into the Arctic Ocean, if we were not capable of stopping it. It was that map that I showed to some of the people when I got up there that really alarmed some of the fishermen and others.

They did not know what the results of Dr. Royer's studies had been. They had been published in esoteric scientific journals. We have four doctors there that will be offended, if I say what really happens to those. They go on your shelves, but we do not get any

understanding of them in terms of the congressional process, at least, we have not in the past.

But that showed that the oil would not leave the entrance—which is the Hinchinbrook entrance, where the water flow comes in. It would leave the other exit from Prince William Sound and hit an entirely different area of Alaska than had been anticipated.

And it was a most interesting thing. We put Royer in touch with the people, the Coast Guard and others and, I think as a consequence, were able to project where the oil was going to go and precisely, and it did. That is exactly where it went. His map is a classic, because what he told me on that plane is what happened to that oil over the next two months.

Dr. ROBERTSON. Yes. We were aware of that work. In fact, we put a mobile laboratory out. It was not in the area of Cold Harbor.

Senator STEVENS. You mean at Cold Bay?

Dr. ROBERTSON. Cold Bay, yes, I am sorry, Cold Bay.

Senator STEVENS. And Dave Kennedy took it there after—there is another thing I would call your attention. There was oil discovered out in Chignik Bay that surprised all of us, that if it had gone that far that fast, we were in real trouble. It turned out that some crazy person had emptied their bilge out there.

Kennedy used your portable lab and analyzed it and proved it was not oil from *Exxon Valdez*, and it was not moving faster than Royer had told us it would go.

Dr. ROBERTSON. Yes.

Senator STEVENS. I have got to tell you, you people are the cops. You keep people honest. That would have changed the whole oil spill recovery technique if that in fact had been *Exxon Valdez* oil out there that far that fast.

I want to tell you, again, my point in raising this, you people need to have a greater ability to disseminate these forecasts. I think that every area ought to know, the manager of the port ought to know what is going to happen to the oil if it spills in this port. What are the currents? Because in the final analysis the currents, and the winds—it could be changed by winds, but normally that is affected by prevailing winds.

I urge you to find a way to get that information out. Where is that oil going to go if it comes out of this cruise ship that is sitting up there now in Massachusetts? Have you told them?

Dr. ROBERTSON. I cannot answer that question. But we do have a program in many of the major ports of the country where we provide, before things happen, a computer network that predicts the spills, tells the managers where the sensitive areas are, et cetera. I do not think we have done that yet for the Buzzard's Bay area. We have done it for many of the harbors.

Senator STEVENS. Well, that is why I have insisted, as a member of the conference on this oil spill bill that you keep a seat at that table in these regional plans now. Because those regional plans are going to be meaningless unless they crank into them the trajectories of the spills, if they do occur, some understanding of what the dynamics of each area are, so that the recovery material and the teams that are trained will know in advance what is going to happen if there is a spill.

Now—again, I said I would be short, but I am not being as short as I should be. I want to join Senator Kerry in this concept of trying to modernize your fleet over a period of time that is reasonable. Now, he has proposed to build, to modernize and expand the NOAA fleet over a 10-year period.

Have you sought support in the administration for that position?

Dr. KNAUSS. Yes, sir, in the following sense: We have under way, started after I came onboard, an in-depth study of what our fleet needs would be in terms of kinds of ships and numbers of ships for the various missions we have for charting and mapping, for fisheries, research and monitoring, and for our deep ocean work, as well as our coastal research work and so forth.

It is a study that was long overdue, and it is due for completion in August or September of this year. It is presently on track, and I suspect we will see results of this study by the end of summer.

On the basis of that effort, sir, we are planning to go to the Department of Commerce and to OMB and ask for funds to begin the modernization which, as you know, will take on the order of 10 years. But it will be based not so much upon a replacement of what we have but on a long, hard look at what our needs will be into the 21st century.

So that is why the study is under way. I know that sometimes studies are looked upon as an excuse for inaction. But when I came aboard and looked at what we had done in the past with respect to looking at our needs for replacement, I was not satisfied that we had made a good enough case to convince either my department or the Office of Management of Budget that we knew what we were up to. And so that is why we had this study under way, sir.

Senator STEVENS. Well, Dr. Knauss, we are going to cancel a considerable number of Navy ship contracts. The cancellation is going to cost the taxpayers money.

I want to explore the possibility of shifting those contracts over to vessels that will have peacetime capability, different configuration, different cost, obviously less, but try to get something for the money we are going to have to pay to close out these contracts for naval vessels.

And I really think that the Chairman's suggestion is the best I have seen so far, of modernization of the NOAA fleet. And I urge you, we ought to get together and look at some of those and see which one of these shipyards can switch over from building naval vessels to building NOAA or Coast Guard vessels. We have already done that with one, incidentally, when we won the battle to have an icebreaker. Everyone thought it was some sort of a provincial thing for us. It is going to be stationed in Atlanta, somewhere down there.

Its duty station will be off my state, and its role will be to try to give us access to the areas that are ice bound. And that is not my state. That is in the area of going across, really, across the top of the Soviet Union, in terms of some of our new trade routes. But anyway, that is just an aside.

Lastly, for the record, will you tell us, you have got in your request, in your testimony, indications that there will be 17 vessels used in research efforts this year. That is a new number for us. I did not know you had 17 vessels. Will you tell us for the record,

where are the vessels are located? What are the plans for utilizing them? Are there any vessels that NOAA has that are laid up that might be brought back into service in terms of the period we are going into with this intensive, particularly, offshore impact of wetlands development?

I think that we might have some reason to find out what vessels are laid up, will not be used this year and if they are laid up and not used this year, what was their role in the past, in the recent past?

Thank you, Mr. Chairman.

Senator KERRY. Thank you, Senator Stevens.

I appreciate your question and your focus on the whole question of the fleet modernization. I was disappointed that last year we could not proceed forward. I mean, last year, I remember going through the list of ships. I think it was before you came on, Dr. Knauss. But, you know, we have got a fleet.

You represent, I think, one-third of the total number of research vessels that are out there—of the Federal research vessels. And you are supporting critical inquiries into fisheries, into the whole ocean mapping and surveying, not to mention the extraordinary pressures now with respect to the climate change issues and so forth.

And it is my understanding that last year, when I went through, ship by ship, where we stood, we have got a fleet that is almost obsolete. I mean, it is approaching obsolescence.

Dr. KNAUSS. That is correct, sir.

Senator KERRY. We are going to turn ourselves into a third-rate country before we even know what has happened, with the rate we are going because we are just unwilling to invest in any kind of infrastructure at all. And this is infrastructure. It is no different from bridges and roads and all the other things. Only this returns a hell of a lot more money to us in many respects, not to mention the important decisions we ought to be making.

So I hope you are going to come in. I take it the $4 million you are asking for in this budget is not a final decision on the plan for fleet modernization?

Dr. KNAUSS. Absolutely not. The budget that you see here for 1991 was put in place well before this study was even started. As you know, a budget like this that you are looking at was put together almost a year ago. And we are now talking about, internally, in our government, what the budget for that will be. We will be talking it about a year from now.

Our plan, however, is to develop a long-term set of requirements for what NOAA will need in terms of a modern set of ships for the various responsibilities we have, charting and mapping for fisheries, for coastal ocean research work and for deep ocean research work. And that will probably be a combination of ships which we will operate ourselves, perhaps ships which we may charter from others.

And, hopefully, it will look at different new kinds of ships, such as SWATH ships and these kinds of things, and we hope to have that plan developed and available by the end of this summer.

Senator KERRY. But if we do that, then, this budget is not going to reflect it, obviously?

Dr. KNAUSS. That is correct.

Senator KERRY. Does that make sense? I mean, we are already one year behind. I put in a 10-year modernization bill last year. We are now one year beyond that, and we are going to be a second year beyond that at a time when you have got a whole lot more—I mean, is it not possible to get this together so we could move forward on it?

Dr. KNAUSS. I am sure you recognize the problem I have as a manager saying that I need money in the future for something that I really cannot explain in any detail what I want. And that was the case a year ago.

Senator KERRY. But why does not the modernization plan that I submitted last year explain in detail what your needs are? I mean, I know, I am—well, I mean, you know, all of us take pride in our authorship.

Dr. KNAUSS. I understand, sir, but I am not sure that it would sell in the Office of Management and Budget where my budget has to be put together.

Senator KERRY. So it really comes down to a question of the administration not being willing to spend the money?

Dr. KNAUSS. I am a part of this administration, sir.

Senator KERRY. I understand. And I am not going to wrestle with you. I am beginning to learn here after five-and-a-half years that, you folks come up here, and there are limits put on you, and you have got to operate within them; and I understand that. But it does not make sense to me.

Dr. KNAUSS. I would be hard-pressed, sir, as a manager, whether I was a part of this administration or not, of authorizing $20 million for fleet modernization, until somebody came to me with a detailed plan within the agency as to what he or she thought were the requirements, both short-term and long-term, and how they were going to need to meet the needs of the agency over the next 20 years.

Senator KERRY. But I did not put my plan together in a vacuum. Our staff sat and worked with your people. I mean, that is where we got the information from. How do you think we learned how many ships were doing what, and how many were obsolete? It does not take a genius to tell if you have got X number of ships, and they are approaching obsolescence, and some of them are laid up and not even operational, and you have got X, Y, Z missions and you are not performing them that you need to get some money on line to get the ships out there.

Let me ask you a simple question. Do you need more ships out there?

Dr. KNAUSS. I am not sure whether we need more ships. We need different kinds of ships.

Senator KERRY. All right. Different kinds of ships. So you have got to have a new kind of ship. Why are you not asking for it?

Dr. KNAUSS. The plan that I saw when I came aboard was essentially replacement in kind, ship for ship. I was not satisfied that that was what we needed for the 21st century.

Senator KERRY. Do you need to replace any of the ships?

Dr. KNAUSS. Yes, sir.

Senator KERRY. Why are you not asking for it?

Dr. KNAUSS. Because a decision was made that we were not going to ask for the replacement of any of the ships until we had a full plan.

Senator KERRY. Well, I think it is a little bit short-sighted. I think we ought to get going on it. I think you could certainly—am I wrong that you could not pick two or three of the ships that you need to replace one for one and begin the process?

Dr. KNAUSS. I suspect we could, sir.

Senator KERRY. Well, maybe we can find a way to see if we cannot try to do that somehow here. And maybe we can talk privately and get a sense of what some of those priorities might be, and who knows where we will come out on our budget. I do not know the answer to that. None of us know what limits we are going to be operating within yet.

Senator STEVENS. Would the Senator yield?

Senator KERRY. Absolutely.

Senator STEVENS. Having, at my ancient age, sat down there, in a similar situation, I would urge that you respond to the question I have asked. I am sure that OMB restrictions will allow you to answer those specific questions. And if you could give us the answers to those specific questions, I think, it is then our task to devise a way to get started.

Dr. KNAUSS. We will.

Senator STEVENS. I will join you on that, Mr. Chairman.

Senator KERRY. Thank you very much, Senator. I appreciate it.

I have a couple of other questions. But let me turn to Senator Adams who has been very patient, and who is now here.

OPENING STATEMENT BY SENATOR ADAMS

Senator ADAMS. Thank you, Mr. Chairman.

Dr. Knauss, I might suggest, as a former Cabinet officer who used to deal with OMB all the time and had 300 budget officers, and we would go in to see the President with two, you have got to do exactly what Senator Kerry mentioned. You have got to ask for what you want and press for it, because they always had their agenda that has usually gone back 10 to 20 years.

And I would suggest—I used to ignore the OMB circulars, but I gather they have a new regime now that you are not allowed to do that as easily. But I support what Senator Kerry has stated.

I have specific questions, and I do not want to mislead you, Dr. Knauss, because I am very unhappy about what has happened, and I know you are carrying many things in your mind. Just as Senator Stevens said, if you have been in the administration, you know that you are thinking many things. I am particularly interested in the West Coast sanctuary off the State of Washington.

Now, I asked you questions about this as a member of the Appropriations Committee when we had the State, Commerce and Justice Department. I wrote you on March 26, 1990 and asked you when it would be designated.

At that time, I was inquiring specifically because we had passed a law for NOAA in 1988 that said that there would be a designation off Washington's coast by June 1990—June 30th, 1990, in com-

pletion of the study of the sanctuary in the San Juan Islands by March 31, 1991.

I now have a letter dated May 8th—and I ask to put this in the record—that says that you are reviewing the Monterrey regulations, and that you are talking to OMB, and that you are talking to the Minerals Management Service. And that you have, therefore, delayed these. They may not come out until winter.

[The letter follows:]

U.S. DEPARTMENT OF COMMERCE,
Washington, DC, May 8, 1990.

Hon. BROCK ADAMS,
U.S. Senate,
Washington, DC.

DEAR SENATOR ADAMS: Thank you for your letter regarding the status of our effort to designate a new Olympic Coast National Marine Sanctuary.

The preliminary draft regulations, management plan and environmental impact statement (DEIS/MP) will be ready for interagency review by the end of May 1990. However, the pace of the designation process is constrained by the complexity of the regulations, and the lengthy public review process required by the National Environmental Policy Act (NEPA).

The proposed regulations for the Monterey Bay National Marine Sanctuary, which we view as a model for future sanctuary designations, are currently under review by OMB. They address complex issues such as Outer Continental Shelf (OCS) oil and gas leasing, which must also be considered in the Olympic Coast proposal. The results of OMB's analysis of the Monterey Bay regulations will have to be considered in preparing the draft regulations for the Olympic Coast Sanctuary for general publication. The anticipated time schedule for completion of a DEIS/MP for the Olympic Coast site is delayed as the OMB analysis of the Monterey Bay proposal continues.

This delay will also affect the timetable for the mandatory public comment periods required by NEPA. We must respond to public interest concerning the Olympic Coast Sanctuary, and will not be able to complete the designation process by the June 30, 1990, legislative deadline without violating the extensive periods of public notice required under NEPA. NOAA is working to complete the review process with designation anticipated to occur this winter.

Your recommendation on offshore energy exploration is being carefully considered, and will be discussed in the DEIS/MP. Your interest in the proposed National Marine Sanctuary has been constructive. We look forward to continuing to work with you toward its designation.

Sincerely,

JOHN A. KNAUSS,
Under Secretary for Oceans and Atmosphere.

Senator ADAMS. Now, I have given you that background, so that you are refreshed that I am not going to let go of this. And I sit here as a member of NOPS and not as a member of the Commerce Committee but as a member of NOPS and of the Appropriations Committee.

I want to know what is the status of the designation process for the West Coast sanctuary? And when is it going to be completed? Because we were promised June 30th. Now it says sometime in the winter. And I want to know from you, Dr. Knauss, when are we going to have it done?

Dr. KNAUSS. I do not have the answer to that, sir, but maybe my colleague does.

Senator ADAMS. Just, please, state your name for the record, so I know who to go and get.

Mr. URAVITCH. Certainly, my name is Joseph Uravitch, and I am the chief of the Marine and Estuaries Management Division in NOAA, in the Office of Coastal Resource Management which is responsible for the sanctuary designation process.

The current status of the Western Washington site is as follows. We completed at the end of May the preliminary draft EIS, the draft management plan, draft regulations and the draft congressional prospectus that are needed for this designation.

What we have done since the reauthorization in November 1988 is that essentially the size of my staff has been doubled to work on the 10 designations and studies that we are responsible to undertake. We have completed the documentation for the Western Washington site at the draft stage. It is in the internal NOAA review stage at this point.

A lot of the delay essentially resulted—besides the Monterey Bay regulations—because of the increase in size of the sanctuary for Western Washington. Through numerous public meetings that we held in Washington State, we are responsible for essentially addressing—based on those public comments—proposals which include the entire Washington coast ranging from the Oregon border up to the Canadian border.

And so, as a result, we had to expand on the level of analysis that we had to perform to put this document together.

Senator ADAMS. But you do have a draft EIS completed?

Mr. URAVITCH. We have a preliminary draft. It is under its first internal review within NOAA, through the National Marine Fisheries Service as well as our Office of General Counsel, and other parts of NOAA to make sure that all of the data are accurate.

Senator ADAMS. But when is it coming out of that process?

Mr. URAVITCH. We expect to have NOAA review completed by the end of June. At that point, we ought to be able to begin the process of getting the draft EIS through the clearance process, probably in the beginning of July. If we finish our internal rules by the end of June, the process would probably begin by the end of July.

Senator ADAMS. When you speak of the clearance process, and this is to you, Dr. Knauss, too—I am very pleased to have him speak to this—are you interacting or requesting approval or clearance from the Mineral Management Service in this process?

Mr. URAVITCH. Not clearance. We are required under the Marine Protection, Research and Sanctuaries Act to consult with other Federal agencies.

Senator ADAMS. I understand to consult with them. But I will ask you the $64 question: What is NOAA's current thinking about prohibiting oil and gas development in the sanctuary boundaries?

Mr. URAVITCH. That is one of the options that we have included in our EIS. But I have not raised the level further in terms of what NOAA's preferred option will be. That has to go through the——

Senator ADAMS. That is in the Monterey Bay regulations, is it not?

Mr. URAVITCH. That is one of the proposals in the Monterey Bay regulations.

Senator ADAMS. Where are they being held up?

Mr. URAVITCH. Those are still in the interagency review process of regulations at the Office of Management and Budget.

Senator ADAMS. Have either gone to OMB or to the Mineral Management Service consultation yet?

Mr. URAVITCH. Yes, sir, we met numerous times on that issue.

Senator ADAMS. Now, what I am concerned about is, I need to know that that type of interaction is and who is holding them up, because we are interested in having the sanctuary. We are past the date now. I have seen these things go on and on before. And we want to have the sanctuary in place, and we very much accept the idea of the Monterrey Bay regulations, which is to prohibit oil and gas development in those sanctuary boundaries.

Now, when are we going to know when this is going to happen?

Mr. URAVITCH. Sir, I do not have the answer to that question.

Senator ADAMS. Dr. Knauss? You might stay for a minute, because I would like to see, and I want to make very clear that the draft EIS goes out before you have run it through other agencies who are nitpickers. Every time you go in to see OMB, for example, with the President, and you have had all these months of work and hundreds of budget agencies, he sits there with two examiners and you have to fight it out.

I do not happen to think this is the way to run the government, but if that is the way it is being run, I want to know what the status is because I am for you and I want this thing to happen. And as soon as possible, and our people want it to happen, because we are very nervous.

Dr. KNAUSS. As you have noted, the question of oil and gas regulations with respect to the proposed Monterey Bay sanctuary is, indeed, an issue of some interest and some contention. It is taking us a long time to reach resolution on that.

I suspect, I hope, let us put it this way, that once resolution is reached upon the Monterey Bay situation, and it is coming to a head, there will be much more—much quicker to develop the regulations and the EIS process for the area off Washington.

Senator ADAMS. Dr. Knauss, before you get into all these internal designations with people who have a specific interest which is—may or may not be very different from yours—should not NOAA go ahead and issue the draft EIS for Washington's coast and then solicit comments, rather than negotiate out the contents with another agency before it is even introduced?

Dr. KNAUSS. I believe, as was indicated, the law under which we operate says that we must at least consult with other agencies before we issue the draft Environmental Impact Statement Consultation is interpreted by people in a number of different ways, as you know.

Senator ADAMS. That is kind of what I am zeroing in on. I have consulted with a lot of people as a Cabinet secretary. And I am very happy to consult with them. But that does not mean, which often occurs, that they both hold up, refuse to come to meetings, or say that they are going to tell me how to draft the particular regulation.

I am for you, and I want this to go ahead. And I want to know what is happening there, because we are now just about to pass the date of designation by law that it was to come out. And I am not very happy about it, as you can see, and I think a number of others are not very happy about it. And we like you and we want you to be successful. And so now you tell me about when you can be successful.

Dr. KNAUSS. Senator, I am sure you know that there are a number of consultations going on at the highest level of our government now with respect to offshore oil exploitation.

Senator ADAMS. I understand.

Dr. KNAUSS. In all fairness, I think it will be difficult to get an EIS out on Washington until some other decisions have been made.

Senator ADAMS. You can at least put out a draft EIS, can you not?

Dr. KNAUSS. Perhaps, sir.

Senator ADAMS. I want you to be aggressive in this, Dr. Knauss, because I used to send those circulars back, as I say. That was in a different time, in a generation, and perhaps you do not do that anymore.

Dr. KNAUSS. I am still new to the process. I am learning.

Senator ADAMS. Well, be very aggressive in this process because otherwise it will not happen. What I am asking you about as a member of NOPS and as a member of the Appropriations Committee and these other committees is the same thing you have heard from Senators Stevens and Kerry. We want this agency to move forward.

A lot of us were here when it was created, and I have the ghost of Magnuson looking over my shoulder all the time wanting to know whether I am getting this job done. I do not feel I am getting it done very well at the moment because this deadline is going to pass. That is why I am asking you for the EIS. I do not want to see oil drilling off that coast.

I am happy to have you consult with these people, but if that consultation is going to hold you up forever we would like to have the EIS out, and then they can come in and consult out in the general public, because generally they will not do that.

Dr. KNAUSS. Senator, if I could just make a point with respect to marine sanctuaries in general. It is fairly straightforward to argue for a sanctuary around the Florida Keys, as Senator Graham's bill has. If marine sanctuaries are going to be used as a way to exclude systematically offshore oil and gas drilling around the coast of the United States, my guess is the marine sanctuary program is going to become a highly politicized area.

Senator ADAMS. I am sure that is true, Dr. Knauss. I agree with that. It so happens also, as you well know, that probably the largest schools of hake and pollack in the world lie off that coast. They have not yet been developed, but they are there. There is an enormous marine resource, therefore, which we hope will be available. We hope they do not foul up Alaska too badly. That is why we are concerned.

We also have, as you know, a very unusual situation there. I do not know whether Chesapeake Bay or Puget Sound is the largest, but one of your experts can tell me what percentage of the fish consumed in the United States are produced out of those two inland bodies. What is it? It is some enormous amount, way over 50 percent, is it not?

Dr. KNAUSS. I do not know the answer, sir.

Senator ADAMS. Do any of the rest of you? [No response.]

Dr. KNAUSS. I brought the wrong experts.

Senator ADAMS. That is all right.

It is enormous. It pales the Gulf of Mexico. The Chesapeake Bay and Puget Sound produce such an overwhelming amount of fish resources, and that is why when you comment about whether I am trying to shut off and carry on a much larger policy debate, I am not. I am trying to carry out a policy debate that deals with the State of Washington, and I am worried that you are being cut off internally and caused to violate the statute. That is the reason for the hearing.

I do not want the statute violated, and I would like to know when you are going to tell me what your situation is; or is Joe going to tell me what the situation is?

Dr. KNAUSS. I will look into it and report back to you.

Senator ADAMS. Would you right away?

I am here today and, as we used to say, I will be there tomorrow.

Dr. KNAUSS. Thank you, sir.

Senator ADAMS. Thank you, and thank you, Mr. Chairman.

Senator KERRY. Thank you, Senator Adams.

One last question before we move on to the next panel, because we are beginning to run behind here. Within the Coastal Ocean Program I understand that there is an important oceanography study which is going to examine the fisheries on the Georges Banks, and I think that is going to be carried out at the NMFS at Woods Hole. I just want to ask you a question about the lab.

Is the lab ready for this new work? Can anybody answer that? Do they need any kind of technical upgrading in order to be ready for this work?

Dr. SCAVIA. I cannot answer that specifically. We can get you that information.

Senator KERRY. Would you check on it just as a matter of a part of this authorization process so that we know what needs to be done there? I think it is very important, and I want to see that happen.

Dr. SCAVIA. We will do that, sir.

Senator KERRY. You know, I will just end with a comment. I was going to make it a question, but I will end with a comment. That is, I was recently part of an international conference, the first global environmental conference of parliamentarians. We had 42 nations, 225 parliamentarians right here in Washington. I headed up the Oceans and Water Resources Division of this group. We had Jacques Cousteau and others present, and it was a fascinating several days.

It is my understanding that as we sit here today we are taking some 87 million tons approximately of fish product out of the ocean, and scientists tell us that the oceans and ecosystem support about 100 million.

We are told, however, that within the next 10 years that the demand for those products will more than double. It will be about 200 million tons. So within 10 years we have some enormous issues to confront. The issue that was raised by Senator Stevens about monitoring the drift net issue, the protection of our own fisheries, coastal zone management and all of these are linked in ways that have never confronted us.

So I could not emphasize more that if we are going to do our jobs correctly and confront these choices—and I am tired of sitting here

watching Washington avoid confrontation of choices. We have got to be aggressive. As Senator Adams has just said, you have to be aggressive. We have to, too.

So I hope you understand that when I am pushing these things, you know, it is a big coastline. There are a lot of coastal states, and not only Massachusetts gains but I think we really have to upgrade your ability to carry out the mission.

In defense of your agency in answering Senator Adams' questions, I think you have more than you can handle. I think you are understaffed, and I think that is part of the problem on why you are behind. If you are, Doctor, tell us. That is precisely what Senator Stevens has said. It will be bipartisan effort here to try to meet your needs and make these things happen, because they are too important to us. They really are.

Dr. KNAUSS. Thank you very much, Senator.

Senator KERRY. Thank you very much. I appreciate it.

Now we will move on to the next panel. If we could have Dr. Boesch.

Dr. Boesch, thank you very, very much for coming. Thank you for your patience. Now if I could ask you to summarize, as we are running, as I say, somewhat behind. I think that would be somewhat helpful to us. Your full testimony will be printed in the record.

STATEMENT OF DR. DONALD BOESCH, NATIONAL RESEARCH COUNCIL, NATIONAL ACADEMY OF SCIENCES

Dr. BOESCH. Thank you, Mr. Chairman and Members of the committee. I am Donald Boesch. I am here today to testify on behalf of the Committee on Systems Assessment for Marine Environmental Monitoring of the National Research Council's Marine Board. I have had the pleasure to chair this committee which completed the report to which you alluded in your opening remarks, Mr. Chairman. I have included in my written testimony a more extensive review of the findings and recommendations of the committee. As you suggested this morning, I will attempt to briefly summarize them, with particular emphasis on their implications to NOAA.

In 1987, the National Research Council appointed our committee. It was a self-initiated effort, developed out a concern that the National Research Council had in many of the studies it conducted on the conflicts between use of the coastal ocean and its environmental protection concerning the critical role of monitoring and the fact that monitoring efforts had fallen short of their task.

Our committee consisted of 11 scientists, engineers, and environmental managers with broad experience in the design and execution of monitoring and, most importantly, in the application of its results.

The committee undertook a 2-year assessment. It first developed a framework for assessing the adequacy of monitoring. This framework included not only issues of technical design and implementation but also of the evaluation of the objectives of monitoring and how monitoring results are used; that is, the committee considered the broad issue of the monitoring system and how it is applied in environmental protection and management.

Why do we feel that improvements in the practice and use of monitoring were needed? The Members of the Senate, of course, are acutely aware of the growing public perception that coastal ocean environments both here in the United States and elsewhere in the world are deteriorating. Reports of refuse on beaches, usual mortalities of marine animals such as dolphins, the seeming epidemic of oil spills over the last year, which you discussed earlier today and noxious blooms of algae and associated oxygen depletion have heightened public concern. Some of these trends of degradation are supported by scientific evidence.

On the other hand, environmental conditions in other historically heavily polluted areas and regions seem to be improving as a result of pollution controls implemented over the past decade and a half. In truth, however, environmental scientists and environmental managers are ill prepared at this point to document the present status and follow the trends of environmental health of our estuaries and coastal waters.

Marine environmental monitoring is already a significant enterprise. Our committee did not attempt an exhaustive survey of all monitoring programs. Our best estimate of national expenditures of greater than $133 million annually is a very conservative figure. Monitoring is conducted by numerous Federal agencies under their legislative mandates by states, by local governments and authorities, and by regulated discharges. Some of the monitoring is conducted in order to demonstrate compliance with permit conditions. Other monitoring programs are more like what was described for the NOAA Status and Trends Program for the purpose of documenting how the environment is going over long time periods.

In order to examine the depth of the problem and promises of marine environmental monitoring, our committee conducted three case studies in which experiences could be related to the environmental framework that we set forth. Two of the case studies concern specific areas of our coast which have received much attention.

The Southern California Bight is a coastal ocean region obviously influenced by numerous human activities and in which there are multiple uncoordinated monitoring programs. We estimated expenditures of some $30 million annually for ongoing monitoring.

The other is the Chesapeake Bay, an estuary in which a new coordinated monitoring program had recently been implemented.

In a third case study, we examined the monitoring of the effects of disposal practices such as for dredged material, sewage sludge disposal, and oil and gas drilling production discharges.

In brief, our conclusions and recommendations can be summarized around three principal points. The first is that monitoring, when effectively designed, applied and used can indeed significantly strengthen environmental management. It can be used for defining the extent and severity of pollution, evaluating environmental policies and actions to help estimate the risk and consequences of future actions, and in detecting emerging problems before they become severe.

However, monitoring is but one part of a broader complement of technical contributions to environmental management which also include research on fate and effects and predictive modeling. These

components—that is, research and modeling—are seldom effectively coupled with integrated monitoring programs.

Furthermore, to be effective, monitoring programs must be conceived as an integral part of environmental management. They must be sufficiently flexible to allow redesign and refocusing and should be periodically reviewed to gauge their effectiveness.

Our second point, Mr. Chairman, is that more regional and national trends monitoring is needed. The committee concluded that the present array of compliance monitoring mandated by EPA and other State and local regulatory agencies coupled with the NOAA status and trends program is inadequate to establish the patterns and trends in quality of the Nation's coastal environment and to determine the effectiveness of environmental policies and regulations.

Most of the resources of this $133 million expenditure that I spoke about earlier are indeed spent on compliance monitoring for specific permit conditions which, while meeting specific limited objectives, do not necessarily address the broader public concerns about whether the marine environment is being degraded or about what such degradation means in terms of the resources and uses of the environment which we enjoy.

In particular, more regional status and trends monitoring in coastal areas of concern is needed to better address these public concerns; to assess the effects of cumulative impacts of multiple activities in those regions; and to provide a context for the interpretation and evaluation of the site specific compliance monitoring which may be mandated by EPA or another regulatory agency.

In some cases, such as the Southern California example I mentioned earlier, where there is already very extensive compliance monitoring, it may be actually possible through regulatory and management actions to reallocate some of the resources already being spent so that they can contribute to regional status and trends information without additional cost. Other regions, of course, have an overall inadequate level of monitoring presently being applied.

The committee recommended that the cognizant Federal agencies, in particular NOAA and EPA, should cooperate to develop a more effective national program to monitor environmental status and trends in the estuaries in coastal areas of this country. This national program should combine regional programs mentioned above as needed with the sparser national network in areas where there is not as intense activity or concern.

The nucleus of this network should be developed through NOAA's National Status and Trends Program and the EPA Environmental Monitoring and Assessment Program which the NOAA folks described earlier. If such a national network, including regionally focused status and trends monitoring were developed, then NOAA should in cooperation with EPA be able to prepare periodic reports to Congress which synthesize the results of national monitoring. This national monitoring program report would document the status and trends of the coastal ocean and evaluate management action, so that Congress would have an understanding of how well we are doing in managing these coastal resources.

Our third point is that improved monitoring program design and information products will make monitoring results more useful for environmental management purposes. The committee concluded that many monitoring programs are ineffective because they devote too little attention to the clear formulation of goals and objectives, to the technical program design and to the translation of data into information—a point that Senator Stevens raised earlier.

There are data out there, but they have has to be translated into information, and they have to be translated into information which is understandable at various levels to decisionmakers and to the public. Our report makes many recommendations about how to improve these more technical aspects of monitoring.

Let me now specifically address how NOAA's role in marine environmental monitoring should be strengthened. Senator Kerry, I am pleased to have seen a working draft of your proposed legislation. From the standpoint of an individual who has invested two years in a volunteer effort on a National Academy committee, it is indeed a rare pleasure to see a piece of legislation which is obviously highly responsive to and consistent with our recommendations.

As you know, NOAA has for several years now been executing the National Status and Trends Program. At this time, the program is limited by resources. It is limited both in terms of the extent of coverage, the intensity of coverage and probably more importantly in terms of which environmental responses are being addressed. It is primarily at this point a toxics monitoring program.

As I said, the National Status and Trends Program addresses toxic substances. These may be a problem in areas such as that represented by you, Senator, in the industrialized northeast and in coastal areas where there is heavy urbanization and industrialization, but in other parts of our coast these are not the most serious problems.

I happen to come from the Gulf of Mexico region and work in that area primarily. An article in Tuesday's "USA Today" highlighted the environmental problems of the Gulf of Mexico, and it quoted a researcher actually involved in NOAA's National Status and Trends Program who suggested that environmental conditions in the Gulf were actually good and improving.

However, this researcher's perspective was based solely on the analytical results of toxic materials in sediments and shellfish and are not reflective of the galloping problems we have with coastal habitat degradation or the nutrient overenrichment resulting from the effluent of the Mississippi River and other rivers which drain into that system. We need more balance in the program over all.

Our committee did specifically recommend increased funding for NOAA's Status and Trends Program but not simply through an expansion of its present mode but through addition in coverage of other environmental responses. We feel that that program should be expanded by the inclusion, as I said earlier, of regional monitoring programs which may be cost shared by states and localities to provide information on the scale and direction which is useful for managing at that level.

NOAA, of course, is not the only Federal agency involved with marine environmental monitoring. In particular, the involvement of EPA and the implementation of the national monitoring pro-

gram network is critical. EPA governs compliance monitoring already. It leads the National Estuary Program, the component programs of which could serve as regional nodes in the national monitoring network. It is presently initiating the coastal component of EMAP, as I said earlier.

Close coordination, indeed integration, of NOAA's National Status and Trends Program and EPA's EMAP should be mandatory.

If I could now make my closing point, Mr. Chairman. It relates to some of the issues that you raised in your questions of NOAA; that is, the coastal ocean program.

As I said earlier, one of the issues we raised was that monitoring alone is just but one of a complement of technical approaches to better understand and manage the environment. Expansion of our monitoring programs alone will not produce significant advances in effective environmental management.

There is a need for expanded environmental research to synergistically support the monitoring thrust. Research and monitoring are not competing but corequisite approaches. Research should address the fundamental environmental processes which must be understood in order to interpret the results of monitoring.

Research is needed to develop innovative monitoring methods, particularly on how biological systems respond as opposed to strictly chemical measurements.

Finally, we need research on how to advance technical designs. Within NOAA, the framework for this integration of monitoring and research, I believe, has been laid out within the agency's coastal ocean program, which defines NOAA-wide efforts in research, monitoring and information transfer.

It is critical that any expansion of NOAA's environmental monitoring programs be within the context, in my view, of the coastal ocean program and that it be balanced with concomitant expansions of associated research efforts.

Let me just say in closing that I make these comments not as an employee of NOAA and not even as one living within the Beltway but coming from the State of Louisiana, where we have serious problems of wetlands loss and coastal ocean eutrophication that this program should address.

Thank you, Mr. Chairman.

[The statement follows:]

Testimony of
Donald F. Boesch, Chairman,
NRC Committee on Marine Environmental Monitoring

Mr. Chairman, I am a coastal ecologist and oceanographer. I am appearing today primarily in my capacity as the Chairman of the Committee on a Systems Assessment of Marine Environmental Monitoring of the National Research Council's (NRC) Marine Board. That Committee completed its charge earlier this year with the publication of a report "Managing Troubled Waters: The Role of Marine Environmental Monitoring" (National Research Council, 1990) which was based on an in-depth analysis of the present practices and uses of monitoring of coastal waters and presented specific conclusions and recommendations on improving the technical quality and practical utility of environmental monitoring. I would like to briefly review those findings and recommendations for you today.

In addition to speaking from the perspective provided by service on the Marine Board Committee, I base portions of my testimony on the insights provided by my present service as Co-Chairman of the Committee on the Coastal Ocean of the NRC's Ocean Studies Board and as Chairman of the Steering Committee of the Council on Ocean Affairs, a national organization of over fifty academic and independent research organizations.

Marine Environmental Monitoring

I know that you are acutely aware of the growing public perception that coastal ocean environments in the United States and elsewhere in the world are deteriorating. Reports of phenomena such as refuse on beaches, unusual mortalities of animals such as dolphins, the seeming epidemic of oil spills, and noxious blooms of algae and oxygen depletion have heightened public concern. Some of these trends toward degradation are supported by scientific evidence, however, the environmental conditions in some previously heavily polluted regions, on the other hand, seem to be improving as a result of pollution controls implemented over the past decade and a half (Office of Technology Assessment, 1987). In truth, however, we are ill- equipped to document the present status and follow the trends of the environmental health of our estuaries and coastal waters. Environmental monitoring is frequently conducted to assess the status of the marine environment, detect changes in its status, and guard against the deleterious effects of specific activities, such as waste disposal. It should be viewed as a component of environmental management, rather than as a stand- alone activity. In that vein, monitoring practices have been widely criticized not only on the grounds of technical adequacy, but on the grounds of usefulness of results in sound environmental management.

The committee did not consider in its assessment continuing observations of environmental conditions for purposes other than measuring environmental quality, such as tide gauging or assessing fish stocks for managing their exploitation. We also did not consider the requirements for monitoring global environmental change, although some of our recommendations are pertinent to this task, at least in coastal environments.

Numerous federal agencies conduct or require marine environmental monitoring and mandates for monitoring exist in many federal statutes. In addition, states, local government and regulated dischargers such as public utilities conduct monitoring in coastal environments. Our committee conservatively estimated that $133 million is expended annually in all these sectors in monitoring activities.

The National Research Council Assessment

In conducting numerous studies of the conflicts between society's use of the coastal ocean and the protection of this environment and its resources, the Marine Board of the National Research Council identified the perceived inadequacies of environmental monitoring as a critical concern. Starting in 1984, the Marine Board began to formulate plans for an assessment of this problem. In 1987, the NRC appointed the Committee on a Systems Assessment of Marine Environmental Monitoring, consisting of eleven scientists, engineers and environmental managers with broad experience in the design and execution of environmental monitoring and the application of its results (Appendix 1), to undertake the two- year assessment.

Our Committee first developed a framework (Figure 1) for assessing the adequacy of monitoring. This framework included not only technical design and implementation, but evaluation of the objectives of monitoring and the use of monitoring results, i.e. the "monitoring system." This is important, because, only if the formulation and execution of monitoring programs address well defined environmental quality objectives, can results be expected to be useful for environmental management.

In order to examine in depth the problems and promises of marine environmental monitoring, our Committee chose to conduct three case studies in which experiences could be related to the environmental framework which we developed. A series of detailed questions were posed for each case study panel. Two of these case studies concerned specific geographic regions, the Southern California Bight--a region of the coastal ocean influenced by numerous human activities and multiple, uncoordinated monitoring programs--and the Chesapeake Bay--an estuary in which a coordinated monitoring program had recently been implemented. The third case study examined monitoring the effects of particulate waste disposal in the ocean. Particulate wastes considered included dredged materials, sewage sludge and oil and gas drilling and production discharges.

Our Committee based its final report on the reports of the three case study panels and its own research and deliberations. This report (NRC, 1990) evaluates the role of monitoring in environmental management, considers ways to strengthen regional and national monitoring, and provides advice for designing and implementing monitoring programs. Today, I will briefly review the conclusions and recommendations of the Committee's report.

Conclusions and Recommendations of the Assessment

Our conclusions and recommendations are grouped under three headings dealing with the role of monitoring in environmental management, needs for regional and national monitoring, and improving the technical design of environmental monitoring.

1. Monitoring Can Strengthen Environmental Management

The Committee concluded that marine environmental monitoring can be an effective technology for defining the extent and severity of pollution, evaluating environmental policies and actions, helping to estimate the risks and consequences of future actions, and detecting emerging problems before they become severe. Monitoring is but one part of a broader complement of technical contributions to environmental management, which also include fate and effects research and predictive modeling. But research and modeling are seldom effectively coupled with monitoring.

Monitoring should be pursued as an integral part of an effective environmental management system in which the results of monitoring are routinely used to guide and focus future actions. These actions may include the formulation of policies and regulations, control or mitigation actions, and the refocusing of monitoring efforts to more effectively contribute to the needs of management.

Monitoring programs should be kept sufficiently flexible for results to be used to redesign and eliminate components that have not produced or are not likely to produce useful information. Agencies charged with environmental management responsibilities should provide for periodic systematic reviews of the results of their monitoring programs.

2. Comprehensive Monitoring of Regional and National Trends Is Needed

The Committee concluded that the present array of compliance monitoring programs, regional monitoring programs, and the NOAA National Status and Trends Program is inadequate to establish patterns and trends in the quality of the nation's coastal environments or to determine the effectiveness of environmental policies and regulations.

Most resources spent on marine environmental monitoring are for monitoring compliance with specific permit conditions. Compliance monitoring meets limited, narrow objectives that do not necessarily address broader public concerns about whether the marine environment is being degraded or about what such degradation means. Regional status and trends monitoring, in particular, is needed to better address these public concerns, assess the threat of the cumulative impacts, and provide a context for interpretation and evaluation of site-specific compliance monitoring. In some cases, it may be possible to reallocate some of the resources of compliance monitoring programs so that they contribute to regional status and trends information without additional effort or cost.

The Committee recommended that the cognizant federal agencies, in particular NOAA and EPA, should cooperate to develop a more effective national program to monitor environmental status and trends in the coastal ocean and estuaries. This national program should combine regional programs with a sparser national network. The nucleus for this network should be developed through NOAA's NS&T Program and EPA's National Estuary Program and new Environmental Monitoring and Assessment Program (EMAP).

New legal authority or regulatory policies should be instituted to allow some resources devoted to compliance monitoring to be reallocated to a regional status and trends monitoring program. Other federal, state, and interstate regional monitoring programs should be strongly encouraged to participate in regional efforts by adopting compatible protocols. Those responsible for managing estuaries included under the National Estuary Program should be required to develop and implement a status and trends monitoring program.

The coordination of marine pollution research and monitoring programs among the federal agencies should be critically evaluated and necessary administrative and statutory changes implemented to improve definition of responsibilities, interagency coordination, and overall effectiveness. Finally, NOAA should, in cooperation with EPA, prepare a report to Congress every three years which synthesizes the results of the national monitoring program, documents the status and trends of the coastal ocean, and evaluates management actions.

3. Improved Program Design and Information Products Will Make Monitoring Results More Useful

The Committee concluded that many monitoring programs are ineffective because they devote too little attention to the formulation of clear goals and objectives, technical program design, and the translation of data through analysis and synthesis into information that is relevant and accessible. Effective marine environmental monitoring programs must have the following features:

- clearly defined goals and objectives;
- a technical design that is based on an understanding of ecosystem linkages and processes, is directed at testable questions and hypotheses, and is subjected to peer review;
- methods that employ statistically valid observations and predictive models; and
- the means to translate data into information products tailored to the needs of their users.

The Committee recommended that monitoring programs should incorporate a rigorous design methodology. Compliance monitoring programs for major activities should be carefully evaluated by agencies requiring the monitoring to ensure that they meet design criteria. EPA, in cooperation with NOAA, should prepare guidance documents on the design of compliance and regional monitoring programs for use by its regional offices, state regulatory agencies, and permittees. NOAA and EPA should promote the development of new techniques and technical protocols for use in regional and national monitoring programs to ensure compatibility and comparability of data.

Strengthening NOAA's Role in Marine Environmental Monitoring

Our Committee's recommendations have several implications for the programs and initiatives of the National Oceanic and Atmospheric Administration which should be taken into account in the Congressional authorization for the agency.

NOAA has for several years now been executing the National Status and Trends Program. At this time, the NS&T Program is limited by resources in terms of sampling intensity and the environmental responses assessed--the NS&T Program mainly addresses toxic substances. Consequently, our committee concluded that this program, even when coupled with the existing few regional monitoring programs, is inadequate to establish patterns and trends in the quality of the nation's coastal environments and to determine the effectiveness of environmental policies and regulations on either regional or national scales.

We recommend significantly increased funding for the NS&T Program, but not simply an expansion in its present mode. Additional measurements of biological responses, effects of nutrient enrichment and physical habitat modification are needed. More fundamentally, the national program should stimulate the development of regional-scale monitoring programs which can supplement the present NS&T Program and provide information directly useful in environmental management of major estuaries and coastal areas. The NOAA program may accomplish this by sharing costs with state and local agencies and providing technical assistance. NOAA would provide assistance in designing the regional monitoring programs, require protocols for data collection, assemble results in a national database and conduct its own monitoring including areas not covered by regional monitoring programs.

NOAA, of course, is not the only federal agency with responsibilities for marine environmental monitoring. In particular, the involvement of the Environmental Protection Agency in the implementation of a national monitoring network is critical. The EPA governs compliance monitoring within the regions; leads the National Estuary Program, the component programs of which could serve as nodes of a regional monitoring network; and is presently initiating the coastal component of its own national Environmental Monitoring and Assessment Program (EMAP). Close coordination of the NOAA NS&T Program and EPA's EMAP should be mandatory. In the evolution of a national, interagency monitoring program, NOAA contributes its experience and perspectives on marine ecosystems and resources and EPA brings its mission and experience in environmental regulation.

Finally, our committee recommended that NOAA take the lead in preparing a periodic report to Congress, expanding on the presently required Report to Congress on Ocean Pollution, Monitoring and Research, which synthesizes the results of regional and national monitoring programs, both those within and outside of NOAA. This report would document the status and trends of the coastal ocean and evaluate management actions to protect and improve its health.

The Importance of Integrating Monitoring with Research and Modeling

As was stated earlier, monitoring both complements and depends on research and modeling to provide an effective technical arsenal for use in environmental management. There is a need for expanded environmental research programs to synergistically support the thrusts in marine environmental monitoring such as NOAA's Status and Trends Program, EPA's Environmental Monitoring and Assessment Program and coherent regional monitoring programs. The research should address fundamental environmental processes which must be understood in order to interpret monitoring results,

the development of innovative monitoring methods, particularly bioindicators, and advances in technical design. Unfortunately, most of the proposed monitoring initiatives do not provide for the needed expansion in research and development. Within NOAA, however, the framework for the integration of monitoring and research has at least been laid out in the agency's Coastal Ocean Program (NOAA, 1990). The Coastal Ocean Program defines NOAA-wide efforts in research, monitoring and information transfer dealing with: nutrient-enhanced productivity, estuarine habitats, coastal fisheries ecosystems, toxic chemical contaminants, and the physical impacts of extreme events. It is important that any expansion of NOAA's environmental monitoring programs be within the context of the Coastal Ocean Program and that it be balanced by concomitant expansions of associated research efforts.

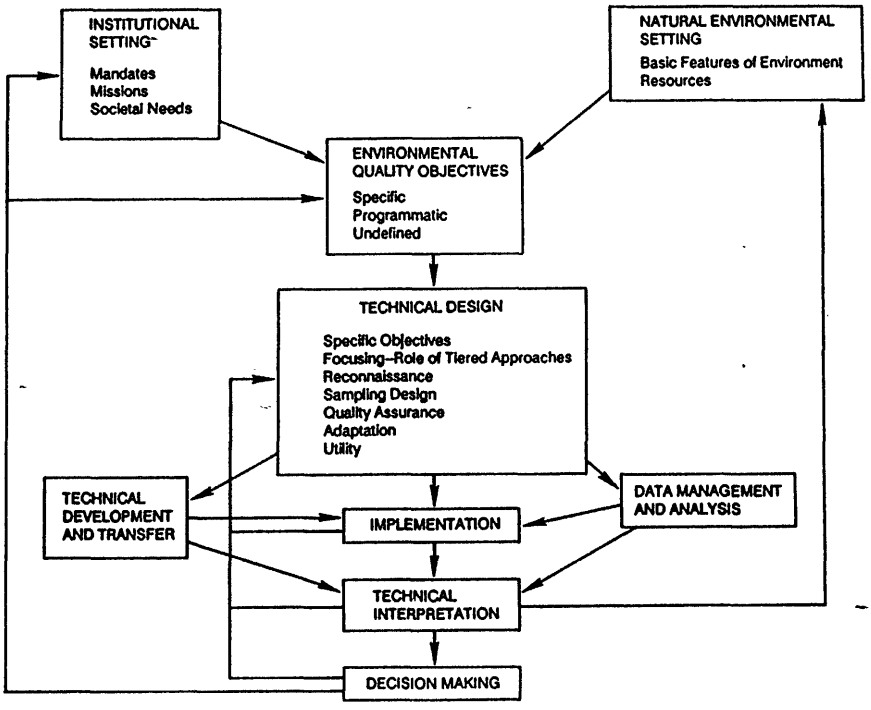

FIGURE 1. A conceptual model of marine environmental monitoring systems.

Senator KERRY. Thank you, and thank you for the fine work you have done and for the National Research Council's contribution. I think it is very significant, and that is a very comprehensive statement actually.

Let me just ask you, are you satisfied that the draft—I mean, obviously the purpose here is to try to find a way to guarantee that the monitoring that we do encourages management choices and enhances the management process. Unless there is a linkage and an adequate one in those two, I mean, really we are wasting time. It does not do you a lot of good to gather a lot of information and have it sit on shelves and never be evaluated and never be disseminated accurately.

It is always hard legislatively to make those kinds of executive things happen. Are you satisfied that this legislation that we have drafted and that you have looked at is on target? Is it going to accomplish those things, or are there aspects of it that you might change?

Dr. BOESCH. Let me just say in reviewing the draft that there are three issues I particularly want to indicate that merit some further thought and attention. The first one concerns the list of issues to be monitored. What is not specifically mentioned is the quality and nature of coastal habitats as opposed to contaminants and eutrophication and other results of water pollution *per se*.

This is a serious problem around our coastal ocean, the loss of wetlands, seagrass beds and the like. Of course, you and your colleagues discussed this today. The fact that we cannot now tell you not only what is the extent of our acreage of coastal wetlands but what have been their trends to any accurate degree.

The other point, I guess I just want to underline rather than take exception with, is the need for integration among the Federal agencies that are involved in monitoring and, in particular, between NOAA and EPA. This is an issue which is talked about but is often difficult to accomplish because the legislative mandates of the agency are different. The cultures and approaches of the agencies differ and, indeed, those differences often translate up through the Federal establishment right through the Congress, where there are different authorizing and Appropriations Committees and so on.

But if we are going to do it well, both agencies need to be involved and need to be working within the same plan.

The final point I want to raise is it is not really addressed in the draft but I do not think we necessarily need a new authorization for it. That is that the linkages between research and monitoring ought to be understood and recognized. We need research programs to support the interpretation of monitoring results.

In my view, within NOAA there is a framework for doing that within the Coastal Ocean Program. The Coastal Ocean Program is a new program. This is the first year it has been implemented, and so in a way it is kind of unfair to ask how have the results been used. I am convinced that it is addressing things which are critical problems and will produce results of use by management.

The other linkage that is critical is the one you alluded to in your question, and that is insuring the transfer of products of monitoring to management. I think also, even though the discussion

earlier today dealt with the Coastal Ocean Program in terms of its science program, as I read the NOAA Coastal Ocean Program documents, it is an attempt to really deal with the fact that there are these multiple units and responsibilities within NOAA. They have been not been working in an integrated way very well for one reason or another because Congress has been supporting various individual elements, for whatever the reason.

The framework set forth allows one the ability to translate the results of monitoring from the Status and Trends Program to the other line office users of that information within NOAA. The Fisheries Service, the Coastal Management Program and the like are all involved in the definition of the program and the use of its results.

Senator KERRY. Is the $25 million that we put in there for the national and regional coastal monitoring activities adequate to do the job? Is that what you folks have envisioned?

Dr. BOESCH. It is hard for me to say because I have not assessed it in detail, but it seems to me to be of the right order.

I would like to suggest, though, that, as we said in our recommendations, there are many areas of the Nation where there are a large amount of public resources already spent on monitoring. Now those may be State moneys, but they may also be resources which are expended by a public utility, a sewage discharger and so on. These funds are already being spent on monitoring, and that we ought to be looking at Federal legislation which allows those organizations to contribute their resources and do something more meaningful than is actually being done right now. In that way, the Federal dollar can be leveraged and cost shared through the development of these regional monitoring programs.

Senator KERRY. What would you say is the proper role to define between EPA and NOAA in coastal monitoring? Obviously in drafting this we try to sort out the correct mix there. It is complicated, and there have been, are and will be tensions.

EPA obviously has a role in coastal monitoring, and NOAA has a very specific mandate with respect to that. What do you think about sorting that out?

Dr. BOESCH. It is hard for me to be fully prescriptive. As an outsider who has worked with both agencies, let me tell you what I think are the strengths that they bring to the table in this mix. NOAA's capabilities and the programs it manages kind of view the problem from the environmental side. NOAA scientists often understand the nature of coastal environments better, and they are better able to bring an environmental perspective to the table.

EPA, on the other hand, has to deal with how these results are actually used in waste water discharge eliminations, pollutant controls and the like. So it probably has a better cultural experience regarding the definition of objectives so that results can be used in actual decisionmaking. The challenge is to bring a mix of both of those perspectives to the table to develop a responsive monitoring program.

Senator KERRY. Who should be in charge, or who should be the lead agency?

Dr. BOESCH. I think in our report we might have punted on that. I think they both ought to be involved. Personally, I think that the

NOAA program is one that has been in place. It has had a history, and so by virtue of that it probably ought to be given some responsibility to lead that effort and attempt to formulate an approach.

The EPA EMAP program is not yet in fully implemented. It is actually in the field for the first year this year in the Mid-Atlantic region as a pilot phase. That program is but one element of the larger EMAP monitoring program which will eventually include monitoring of all media: air, forest, surface waters as well as coastal waters.

So there are some requirements that EPA has for the coastal program to make those results consistent with its other monitoring programs which have to be factored in.

Senator KERRY. Well, Doctor, I want to thank you. I appreciate your testimony this morning. I think your testimony itself is very clear and straightforward and stands as a strong record with respect to the monitoring issue. If need be, we would like to reserve the opportunity to get back to you to look for further counsel with respect to this.

Dr. BOESCH. Thank you, Senator.

Senator KERRY. Thank you. I appreciate it very, very much.

If I could ask the Florida contingent, all parties, to come to the table at this point. I am delighted to welcome Mr. Craig Quirolo, Coordinator of Reef Relief; Mr. Pat Yananton of PRIDE; and Mr. Bob Holston from the Florida Association of Dive Operators.

Welcome to all of you. Thank you for taking the time. We are delighted to have you here. Is there any particular order that you want to go in? Why not just run down the table, then.

Mr. Holston, if you want to lead off.

STATEMENT OF BOB HOLSTON, FLORIDA ASSOCIATION OF DIVE OPERATORS, KEY LARGO, FL

Mr. HOLSTON. Mr. Chairman, thank you for the opportunity to appear before you today. My name is Bob Holston, and I represent the Florida Association of Dive Operators. I am also on the Governor's Tourist Advisory Council for the State of Florida.

The Florida Association of Dive Operators represents the scuba and snorkel industry in the State of Florida. Our industry contributes in excess of $1 billion per year to the economy of Florida. The majority of this economic contribution is directly related to the diving industry in the Florida Keys. Dive travel, according to Skindiver Magazine, accounts for approximately 60 percent of the economic base of our industry, and it is growing. It is one of the largest growing segments we have.

The Florida Keys are the number one dive destination in the world because of the unique coral reef system found in the Keys. In fact, more people visit the Florida Keys each year than all of the Caribbean Islands combined. You could add up the total of the Caymans, Cozumel, Bonaire and Honduras, and it does not approach what comes to the Florida Keys.

The Florida Association of Dive Operators originally nominated the coral reef system in the Keys as a marine sanctuary. Our members are probably the most educated user group in coral reef protection and preservation. We see firsthand the damage that is done

by ship groundings and careless boat operators improperly anchoring. We have watched the gradual deterioration of our reef system and water quality.

When it became apparent that something had to be done, we responded. Our decision to nominate the reef system as a sanctuary was positive and progressive. We had discussed our plans in advance of nominating with various user groups, and at that point back in 1985 and 1986 had not received any negative responses. We spoke with commercial fishermen; we spoke with charter boats and tourist-related businesses.

We are concerned about the emotional and inaccurate representations of self-serving groups that have generic names. Chief Justice Oliver Wendell Holmes once said the first step towards improvement is to look the facts in the face. We can only improve and preserve the reefs by establishing the Florida Keys as a marine sanctuary. The mandatory public hearings required by law will allow for input by all concerned groups and the public. A comprehensive management plan must be developed and implemented. The preservation of our reefs affects not only the diving industry but the commercial fishermen and the general public also.

Your support of S. 2247 is vital and necessary. The decisions that you make will impact future generations. The coral reefs are a precious and priceless commodity. It is our duty and our obligation to ensure that our sons, daughters and grandchildren will be able to enjoy the beauty and splendor of the only coral reef in the continental United States.

Thank you.

Senator KERRY. Thank you, Mr. Holston.

Mr. Yananton.

STATEMENT OF PAT YANANTON, PRIDE, ISLAMORADA, FL

Mr. YANANTON: It would be nice if some of the NOAA officials could stay here. I have been living in the Florida Keys for the last 2 years full-time. I am a New Jersey diver and former senior scientist for Hoffman-LaRoche. I have worked with a lot of the legislative staff in New Jersey on a lot of the water pollution problems we had there. There is no doubt that New Jersey is by far the most populated, the most polluted area in the world. Massachusetts suffers from a lot of problems that we do in New Jersey.

I have also been coming down to the Keys for the last 20 years. I have owned property there and presently have a business there. I am an ecologist, a certified diver, a marine historian. I have a U.S. Coast Guard certified boat operator's license, and I know the areas very well in the Florida Keys. I also hold a public service commendation from the U.S. Coast Guard.

I worked with the New Jersey Bureau of Marine Fisheries in experimentation of artificial reef programs. Now that is an attachment to my speech which I have had sent to you. I have been on the road the last two weeks, and I have kind of put all this together by telephone. I just received some of this data before, and I would like to relay what basically is a position from various groups that live in the Florida Keys.

I am here to represent the Organized Fishermen of Florida, not just PRIDE. I am also here to represent Monroe County Cares and some of the tropical fish collector industry down in Florida.

Now one big problem that we see is many people hear the word "sanctuary", especially citizens not living in the Florida Keys, and immediately believe that a sanctuary will cure all the environmental ills of the area. It is a point of fact that the present sanctuary systems which occupy almost 50 percent of the entire reef system, including the most luxurious reefs in Florida, are experiencing multiple difficulties they cannot control. A Florida Keys national marine sanctuary plan will ignore many of these problems while exacerbating others.

In addition, this plan would upset the present balance between free ocean and existing sanctuaries and parks, creating economic hardship for many occupants who have worked the region for many generations. All of these following facts are based on science and scientific fact, and it is not due to self-serving groups. We are trying to get some truth and knowledge in the area here so we can help our reefs because we need them. Our lives depend on them. We are a minority voice.

Number one, point of fact, the present sanctuaries in existence cannot resolve the greatest threat to reef ecosystems, which is water pollution from outside sources. Before today ends, more than 225 million gallons of raw sewage, secondary treated sewage, is going to be released from Miami outfall pipes. These pipes are located in 90 feet of water. They are located in the Gulf countercurrent. The net flow is south. It is a very complex system of eddies. The net flow is south. The nutrients released from these pipes just three miles off the beach promote rapid algae growth, inhibit and destroy coral growth, carry toxins, pesticides, heavy metals, and can result in permanent reef destruction on a greater scale than any anchor groundings, ship groundings, divers or all of the local intrusions that are occurring in the existing marine sanctuaries as well as other areas.

Presently there are outbreaks of algae occurring on the existing sanctuaries off of Key Largo, and that is attached. That is in my speech, and you should have a copy of that. They do not know what is causing it. There are not enough people to look into it. The marine sanctuary plan deals with shuffling people back and forth. It does not deal with water chemistry.

As a matter of fact, the designation of a sanctuary in the Florida Keys is a very particular problem, unlike many others, so do not be netted into the thought that just throwing the sanctuary concept up and management team in there is going to cure it. It will not.

I have included a scientific paper of the degradation of Careysfort Reef, a study that has taken 10 years and which shows the gradual ruin of this particular area. This paper is attached for your examination. It is also just south of the countercurrent that carries all of the sedimentation from Miami. A lot of this damage that is occurring there is due to the flow of sediments and sewage from northern areas.

This is a perfect time to bring in NOAA because this is an area that is very little studied. The currents need more documentation.

The nutrification of our ocean and the area needs a lot of study before you move in any conceived plan of covering the entire keys.

I personally have made observations from the air and have seen miles and miles of discolored water flowing south and inland towards Miami Beach from these outfall pipes. A lot of sanctuary proponents say extend the sanctuary boundaries and take over jurisdiction of the discharges.

I would like to see how understaffed sanctuary officers and underfunded officers can achieve what the EPA and the Clean Water Act have been unable to achieve since 1972. This unrealistic philosophy would have to extend sanctuary boundaries all the way to West Palm Beach and up through the Everglades to Lake Okeechobee to cover all of the sources of pollution.

We have a massive amount of water pollution entering the area. Florida Bay is sick. We have lost over 80,000 square acres of grassland to nutrification coming from farms all along the area, and it flows out into the ocean. Will a sanctuary plan address that?

The health of our most northern reefs at least will depend on actions taken by the Environmental Protection Agency as required by section 302 of the Clean Water Act amended in 1987 which states whenever new information indicates a negative change in the environment due to previous policies of sewage discharge, the EPA administrator can institute alternate affluent control strategies for point sources.

We, the citizens of the Florida Keys and all of the groups involved, are planning to present a "phase out pollution, phase in new technology plan" to the Environmental Protection Agency and our county commissioners. I have given you a sample of that plan in my speech.

We have developed this plan based on growing populations, public sewage systems, old technology and the phasing in of new technology to compensate for our exploding populations. We are the only animals in the world that pump all of our sewage out into the ocean, and we are nutrifying the whole county's waters.

You talked about problems with fish populations. We have to talk about the quality of water. It is our existing ancient philosophical techniques of pumping waste into the water. That has got to stop, and it can stop. I will gladly talk about our plan at some other time when we have more time.

Point number two. Shipwrecks have occurred off the Florida Keys for the past 400 years and have left no permanent scars. Reefs always grow back as long as you have good quality water. The last groundings that have occurred have occurred in marine sanctuaries. Just the designation alone does not put a physical object out there for mariners to see.

Now proponents argue that ships running around in a marine sanctuary can be heavily fined, and these fines can be reintroduced into sanctuary resources. However, ship groundings are a rare occurrence and may be made more so hopefully due to the areas-to-be-avoided proposal by the Coast Guard, and we support that. We want to protect our reefs.

In contrast, what a lot of people fail to see is that a sanctuary, if expanded as is proposed by the Senate bill, will create on a day-to-day basis financial hardship for the working class down in the

Keys. So in effect we are going to suffer on a day-to-day basis due to the foreign ship groundings that are coming on our shores, and we will be affected negatively.

The present marine sanctuaries are also helpless in the face of natural massive reef destruction such as hurricanes, predators, changes in water temperature and chemistry. Reefs are constantly changing, moving, dying and being reborn, and it has been going on for millions of years in response to environmental conditions.

The present Florida Keys are on dead coral, and reef dynamics can proceed only in healthy, clean water. Mankind's intervention in the form of a sanctuary management plan is a waste of tax dollars in the face of natural massive destruction such as a hurricane. Manage the present sanctuaries more effectively, if you will, but keep it limited to present locations. Realize the expansion plan, too, is going to cover an area of very sparse coral. It is not the luxurious coral that is already under sanctuary management. If you extend this plan you are going to hurt a lot of people.

One other important point. Sanctuaries and marine parks in the Keys attract thousands of tourists who dive and snorkel every day and cause unintentional damage to the reefs. We all agree to that. We all know that. A lot of the damage is occurring at Grecian Rocks. It is occurring within the park. A lot of the buoys attract the novice divers who come to the Keys. They go right to the area. They snorkel, they scuba dive, they flounder around. Your experienced divers do not go to these places.

What is happening is the buoys that we put up are attracting crowds and causing damage, and you are getting the exact opposite of what is going on. We have testimony from charter boat captains who can show you slides of Looe Key before and after as well as the existing reefs and the existing sanctuary. You will see that there is a lot of destruction going on. We have to redesign those buoys. We have to have, like in St. John's, underwater trails that keep the divers away from the reefs. Do not just flock them around the reefs.

There is a lot of improvement that needs to be done in the present existing sanctuary, so please do not perform an experiment on us in the Keys without thoroughly researching what is really going on. We invite you to come down there and look at the areas that we are talking about.

The greatest impact that the Florida Keys sanctuary laws expansion is going to have is to negatively affect the lives and finances of many occupations ranging from fisheries to marina operators, real estate sales, restaurant sales, not just historic shipwreck salvagers and tropical fish collectors.

Everybody is trying to keyhole us in that we are trying to protect these few areas. You are talking about bringing the marine sanctuary right up to the shoreline. Where is there a sanctuary that comes up to a populated area loaded with hotels, houses, marinas, resorts, right up to the shoreline? You are going to break sanctuary law every single minute of the day in that particular area.

Also now you have to consider Hawk's Channel. You have to take Hawk's Channel out of the sanctuary plan, which puts shipping right in behind the reefs. This whole plan needs a lot of examination before you even begin to think about implementing it.

The National Marine Sanctuaries Act states because of questions of manageability the maximum size should not exceed that of the largest marine sanctuary of the channel islands, which is 1,252 square nautical miles.

The Florida Keys represent an enormous area of more than 2,000 square nautical miles, almost two times the size of the channel islands. An area this size, as discussed in the National Marine Sanctuaries Act, becomes too unmanageable, unmaintainable and unenforceable. Where is the money going to come from to manage the area? New user fees, taxes, licenses?

What it boils down to, gentlemen, are we going to spend our tax dollars and our efforts and use our intelligence wisely to tackle the problems that are coming in the future?

The picture of that shuttle on the wall shows that we can go up into space and walk on the moon anytime we want, and yet we cannot get the smarts enough to protect our own environment. Come on now. The 1990s are here. Let us focus in on the true problem, water pollution. We have to do away with it. We have the technology. We have the smarts. Let us do it.

If you want to protect a few reefs more, lets get some buoys out there. Do not bring the whole concept into the shoreline. Let's get the present sanctuaries working more effectively before we take it from there.

Thank you very much.

[The following information was subsequently received for the record:]

PRIDE
P.O. Box 1692
Islamorada, Florida 33036
Preservation of Our Right As Individuals To Discovery And Exploration

Senator Ernest F. Hollings, Chairman
United States Senate
Committee on Commerce, Science, & Transportation
Washington, DC 20510-6125

Dear Senator Hollings:

Attached are answers to Senator Kerry's questions as requested.

The questions go to the heart of our beliefs in the Florida Keys regarding the Florida Keys National Marine Sanctuary program and are excellent questions.

I hope that copies of the questions and answers will be distributed to all the members of the committee.

I was extremely disappointed to learn that the committee passed Senator Graham's sanctuary legislation before the date of public input and comments expired. I was told by the committee that input from private citizens, groups etc. would be allowed for a twenty day period after June 14, 1990.

Also my testimony representing all the commercial groups in the Keys is due by July 2, 1990 -- yet it will arrive after the fact.

People living in this community have requested an explanation of your proceedings. I personally am alarmed and disappointed by the obvious neglect of our testimony despite the apparent lack of knowledge most Senator's on the committee have of our area as evidenced by the nature of the questions. I had hoped to play at least a small educational role with my answers to your questions regarding the location and distribution of our reefs in relation to the existing sanctuaries.

Could you please inform me how a Bill which negates citizens livelihoods can be passed through an investigative system without testimony by the people it will affect?

Since we are not familiar with the operations of your committee, I look forward to your reply. Thank you for allowing me to speak on behalf of PRIDE, Organized Fishermen of Florida, Monroe County Cares and the Marine Life Association.

Sincerely,

Patrick M. Yananton

PRIDE
P.O. Box 1692
Islamorada, Florida 33036
Preservation of Our Right As Individuals To Discovery And Exploration

ANSWERS FOR SENATOR KERRY
FROM PAT YANANTON

Question #1: You have given testimony that current sanctuaries already include nearly 50% of the entire Florida Keys reef system. However, the existing Key Largo and Looe Key sanctuaries cover only about 105 square miles between them. This would imply that the entire reef system covers only about 200 square nautical miles. Since the reef system is over 300 miles long and 10 miles wide, I do not understand your statement. A more accurate estimate might be 5%.

--- How do you explain this apparent discrepancy?

--- How did you arrive at the 50% figure?

Answer: For your information please find attached a scientific discussion regarding Reef Distribution in Florida by Marszalek, Babashoff, Noel and Worly.

It is vital that the Senators and Congressmen of this country, studying a Florida Keys National Marine Sanctuary plan realize that the Florida Keys reefs are not distributed evenly. The majority of our most luxurious reefs, our most abundant reefs lie in the upper Keys, seaward to Elliot Key and Key Largo, and are included in existing Parks or Sanctuaries. Very few reefs exist in the middle Keys. In the lower Keys reef development increases once again, but is much less than Elliot Key and Key Largo.

Dr. Henry Feddern, Scientific liaison for the Florida Marine Life Assoc. performed a mathematical analysis of the actual areas of reef between Miami and Key West. His study was based on charts from a publication produced by Minerals Management Service "The Ecology of the South Florida Coral Reefs": A Community Profile (MMS 84-0038). Dr. Feddern's calculations of total areas, coral areas, and coral percentages were derived from these data.

Dr. Feddern stated in his speech to the subcommittee on Oceanography and Great Lakes, "The 156 mile length of reef covered by the maps when multiplied by the distance from shore to the 300 foot isobar yields an area of about 1300 square miles. This is 2/3 of the area included in the Sanctuary bills. The combined areas of Biscayne National Park, Pennekamp State Park, Key Largo and Looe Key National Marine Sanctuaries is 475 square miles. This 475 square miles or 36.5% of the total area contains 43.6% of the coral areas and include the best, most accessible, most visited coral areas. The remaining coral areas are much less desirable as is indicated in "The Florida Keys Sanctuary Expansion Study Draft of Sept. 28, 1989 developed by the Sanctuaries office. No calculations were performed on the reefs around Fort Jefferson Monument due to a lack of specific data, and their relationship to

the remaining 700 square miles of the Sanctuary plan. However the 43% is approximately correct.

The paper I've submitted to you also discusses the unequal reef distribution in detail and displays the area under discussion on pages 225 and 226. Please note that where the present Sanctuaries end in Key Largo, the major reefs end with a few exceptions. Notice on page 226, plate #3, which displays an area almost void of reefs. Throughout this paper, outer reefs and patch reefs are described as being found in the upper Keys with very few in the middle Keys and with the remainder in the lower Keys.

I testified that the present Sanctuaries which already occupy almost 50% of the entire reef system allows for the present socio-economic balance of free ocean vs Sanctuaries for the inhabitants who live here.

Why does the Federal Government wish to take over areas nearly void of reef area and impose economic hardship on its citizens when it cannot control crowding, ship grounding, and pollution damage occurring in its existing Sanctuaries?

Question #2: You have stated that deteriorating water quality is the primary threat to the reefs and that you support pollution controls that would protect them from continued degradation. Depending on how a sanctuary management plan is written, it can provide substantial water quality protection, including prohibition of new discharges within the sanctuary and outside the sanctuary where they impact sanctuary resources. The existing Florida sanctuaries do prohibit discharges, but their small size limits their effectiveness in addressing water quality issues.

--- Would you support a unified Florida Keys sanctuary if it provided significantly increased protection from water quality threats?

Answer: When you realize that the majority of our reefs and our best reefs are located in the present Key Largo Sanctuaries, Biscayne National Park, and John Pennekamp Park and that they are absolutely helpless and paralyzed regarding their ability to deal with the worst sources of pollution, common sense dictates the battle lines are already drawn, and sanctuaries lose! (See attached)

We don't need sanctuaries to upgrade water quality. Presently no discharges can be implemented into the ocean unless approved by EPA. Those discharges causing nutrification of the northern reef are permitted by EPA, specifically sewage outfall pipes, the closest being in Virginia Key, right above Fowey Rocks in Biscayne National Park, and the Key Largo National Marine Sanctuary. Do we have to extend the sanctuary up to Miami to get EPA to change the effluent limitations? No, we need the good Senators and Congressmen of the country to make sure the Clean Water Act is used

as it was meant to be. It doesn't take a Florida Keys National Marine Sanctuary to get EPA to enact a phosphate ban in southeast Florida and install tertiary water treatment for outfall pipes located in the close vicinity of fragile coral environments. You can request that EPA begin a study today after reading this. It doesn't take a sanctuary plan to extend the pipes further out to sea! You can convince other Senators to help you contact and put the pressure on EPA today to begin to make a difference. Why make a future sanctuary plan sound more than it is when all that's necessary is to put existing laws to work? The ten year phase out/phase in plan I submitted to you is an example of other ways we can ensure the ultimate elimination of ocean nutrification by the year 2000. I'm sure this great country can come up with the necessary technology to help EPA now that we don't have to spend all of our tax dollars on missiles and arms. Please realize a sanctuary plan puts restrictions on people. A Florida Key Marine Sanctuary represents a wall going up and around the people of southeast Florida as the walls of Berlin are coming down in Germany.

We cannot support a bill that restricts rights, freedoms, and livelihoods of its citizens when other alternatives based on non restrictive laws are available.

Question #3: You state that the existing sanctuaries do not prevent vessel grounding. Yet unlike these sanctuaries, the proposed sanctuary clearly would prohibit certain types of vessel traffic, providing some real protection from vessel grounding. However, in order for such a prohibition to be practical and effective, the sanctuary must be of a sufficient size to steer vessels away from the reefs.

--- Would you support a unified Florida Keys sanctuary if it provided significantly increased protection from vessel traffic damage?

Answer: Again, realize that the majority of the reefs are located off Key Largo in the sanctuaries where most ships hit. There is little to protect until you reach Big Pine Key. While the proposed Keys National Marine Sanctuary is supposed to be designed to steer vessels away from the reefs, it would do so at the daily expense of the citizens living there. At 4 public hearings held in 3 different locations in the Florida Keys, its citizens voted against the National Sanctuary plan by more than 6 to 1. Why---because this proposal threatens their profits, their overhead, their lives and livelihoods. Yet at public hearings held by the Coast Guard 100% of the people testifying, including PRIDE, supported that the Coast Guard create new and better "Aids to Navigation."

As you know, Governor Martinez has enlisted the Coast Guard to change nautical charts to demonstrate the Keys reefs as an "Area to be avoided." This may help, is inexpensive, and does not impose

We have requested that the Coast Guard implement a "Vessel Traffic Control System" currently used in Seattle, WA and Alaska. This system could be put in place for less than 1 million a year and would ensure that vessels remain off the reef unlike any other system. A sanctuary can fine, after the fact, it cannot prevent an intoxicated captain from straying off course. A vessel traffic control system would immediately contact any ship straying to close to the reef.

We support the best laws that bring the best protection to our reefs. We must protect our reefs from careless navigators and accidents, and not punish our citizens because of careless navigators.

Senator KERRY. Thank you very much.
Mr. Quirolo,

STATEMENT OF CRAIG QUIROLO, COORDINATOR, REEF RELIEF, KEY WEST, FL

Mr. QUIROLO. Thank you for allowing me to speak here. It is a real pleasure to be here. I would like to submit my written testimony.

There is actually one change in there. I gave a few suggestions, and unfortunately I put the Congressional bill number on them instead of S. 2247. So that should be changed. The suggestions do apply to the Senator's bill.

My name is Craig Quirolo, and I am founder and director of a nonprofit grassroots group in Key West called Reef Relief. We maintain 83 mooring buoys on six different reefs spanning about a 13-mile area just south of Key West, Florida.

For 14 or 15 years I was a charter boat captain taking people from Key West to the reef, and so I have a little bit of knowledge about what the reef looked like 15 or 16 years ago. I have watched its progressive decline.

One point that I think needs to be stressed here is that the County of Monroe has a tourist development council that collects—I an not sure of the exact figures—between $6 and $10 million a year which they spend for one purpose; that is, to promote tourism.

I think if we did not have the two existing marine sanctuaries in the Florida Keys we would probably have very close to the same number of visitors that we have today. We are faced with an attempt to manage $10 million worth of tourists, and it is a big problem. Key West alone has well over 100 boats ranging from—90 feet down to a lot of small 20-foot boats that commercially operate and use the natural resource of the living coral reef.

Reef Relief has received lot of publicity recently. The President gave us an award for our volunteer efforts to help preserve the reef, but absolutely none of this credit can be given to Reef Relief alone. I wish NOAA was here to hear this, but we are really behind the sanctuaries program. We think that their influence has gone well beyond the boundaries of the two existing sanctuaries. We in fact use exactly the same mooring buoys that they use in the sanctuaries. In fact, we have to have the managers of those parks come down and help us with the installation and the location of where we place buoys.

Every single step of the way the marine sanctuaries personnel have been at our side giving us the expertise that we need to pull

off this program which we are doing on a voluntary basis. Our budget last year was close to $125,000, which gives you an idea of how much money we have generated as a small Key West group. The interest in the reef is staggering right now. We have more members in our organization from out of state than we do from in state.

The reefs in the Florida Keys are of great national interest. We have heard that we are dealing with a very serious pollution problem in the Florida Keys, and we are encouraging the sanctuaries program to address those areas of point source and nonpoint source pollution. We know that the agricultural areas of central Florida probably contribute a lot of nutrification to the waters that end up in the Everglades, the Bay of Florida and eventually out on the reef. We should encompass as much area as possible with the sanctuaries boundaries so that these areas can be dealt with.

Not to change the subject from the reef, but in the Florida Keys I believe there are six national wildlife reserves. There is the Great White Heron National Reserve. There is the Key West Wildlife Reserve. We have a lot of keys that are designated as bird sanctuaries.

Unfortunately, the enforcement from the Fish and Wildlife Service has a problem and I will give you a specific area. The Great White Heron National Refuge is having a serious problem with jet skis. We have jet skis that are actually brought out to the refuge on a barge, and people are shuttled back and forth all day long out there. They literally at times have race courses through these rookeries.

One of our board members, Vicky Impallomeni who is a local conch (born in Key West), retrieves up to five dead birds a day. The reason these birds are dying is that they are territorial. They do not have time to wade and feed when the water is at its low because of jet ski traffic, and so they virtually starve to death.

We are encouraging again the sanctuary boundaries to cover as much territory as possible so that there will be enforcement on the waters. The problem right now is once you leave the low water line there is virtually no enforcement agency that can work out there except the marine patrol. They really cannot find anything illegal about operating jet skis at 40 and 50 miles an hour through a rookery where birds are nesting. It is a very serious problem.

Again, Reef Relief is a strong advocate of the marine sanctuaries program. We believe that their presence in the Florida Keys for the last 8 or 10 years—well, I would put it this way. Without their presence in the Florida Keys, we would be really in the dark ages. When Reef Relief first attempted to put mooring buoys in, we went to a Monroe County mooring buoy study group, and they were looking at putting in 600 kilogram anchors with tons and tons of chain on them in order to secure a boats positioned over the coral. Well, thank God that the sanctuaries personnel had developed a state of the art mooring buoy that we have today.

So from the very beginning the sanctuaries program —and again I want to emphasize this—has gone beyond the boundaries of the current sanctuaries with their expertise. Unfortunately, there are a lot of other reef tracks in the Florida Keys that have no protection whatsoever. We think that the creation of a sanctuary that

will encompass the entire Florida Keys would, number one, alleviate the anchor damage, which again is caused by $10 million worth of tourists coming down here and visiting our reefs.

With the population increase in south Florida, the roads having been rebuilt down to the Florida Keys. We are having a tremendous amount of weekend traffic from, so to speak, local people from Dade, Broward and Collier counties. So we are virtually being inundated with people, and the idea of not having the capability of managing those people out at the reef is just beyond my better judgment.

The County of Monroe made a decision ten years ago to promote tourism. They do very little to control or manage those tourists once they get onto the water, and it is just absolutely necessary for us right now to take steps in order to better manage these areas.

To hit on the point again, we really think that the sanctuaries program needs more teeth to address the pollution problem that we are having. The idea of encompassing the entire area is that it will give the capability of monitoring water quality from all of these different areas, the bay side, the Atlantic side and Hawk's Channel, even outside of Hawk's Channel even probably closer to the Gulf Stream.

We believe that monitoring, though, and doing studies is not the ultimate answer. That is just the first step in trying to address what these problems are.

Another problem that comes to my mind right now is that you cannot expect the marine sanctuaries program by themselves to change the water quality problem that we are having in the Florida Keys. They could be the experts that find out where the pollution is coming from or at least try to narrow down where the pollution is coming from, but their data should be given to other agencies that already exist to enforce water quality standards.

I think it is time for all the agencies to work together on this and resolve this problem. I can speak to you as a lay person, not as a marine scientist but as a person who has been snorkeling and diving these reefs for close to 20 years, that if we do not get on the ball right away we are going to have major problems out there turning the living coral reef of the Florida Keys into the living algal reef of the Florida Keys.

Right now, the algal blooms in the summer are becoming tremendous. We are seeing more and more algal cover the hard coral areas. So again, we stress the importance of the marine sanctuary encompassing a larger area and doing something about it, and not just doing a 10-year study program of what is causing the pollution. We do not have 10 years. That is just in the layman's guesstimate, but I do not believe we have 10 years left of that reef unless we start to act and again get some teeth into the sanctuaries position.

Of course, when you look at a large sanctuary, larger than any other in the country right now, the cost factor always comes up. How are you going to finance this? There are a couple of very obvious ways. If it is anticipated that 2 million visitors snorkel on our reefs a year, just the fact of charging a fifty cent user fee through commercial activities could generate one million a year.

There has been talk in the commercial industry, mainly the snorkel industry in Key West which is really growing with leaps

and bounds, of having limited entry. Right now we have times at the reefs when there are over 200 people at once snorkeling the coral. We believe that ultimately limited entry into certain commercial activities on the reef is necessary and will be the way of the future. So we encourage a limited entry program into commercial activities on the reef.

Just to conclude here, the mere fact that both Congressman Fascell's and Senator Graham's proposed bills now are here and we are discussing them in Washington has really increased the awareness of just about every person living in the Florida Keys, whether they are for or against the sanctuaries. There is a most definite consensus similar to the opposition to offshore oil that we have a serious water quality problem bearing down on the Florida Keys' ecosystems and that now is the time to take action and do something.

Again, I want to stress we need action out there. There are a million things going on when you get out to the reef. The reality of it is a lot different than talking about it in a room like this.

With our experience we found that the marine sanctuaries personnel are the most capable people that we have run across when it comes to managing living coral reefs, and we encourage you to pass this bill and, again, to encompass as much area as possible.

Thank you very much.

[The statement and questions and answers follow:]

TESTIMONY OF

CRAIG T. QUIROLO

Executive Director, REEF RELIEF

Introduction

It gives me great pleasure to speak before you today in support of the bill before you to create a Florida Keys Marine Sanctuary. My name is Craig Quirolo and I am Founder and Executive Director of the Key West-based environmental group, REEF RELIEF. This organization was founded on the principles of protecting and preserving the living coral reef of the Florida Keys. More than half of our membership is of concerned citizens who rside outside the Florida Keys.

Our most important program is the installation and maintenance of eighty-three reef mooring buoys, at six different reefs spanning a thirteen mile distance. Buoys eliminate the need for boaters to drop anchors on the living coral.

REEF RELIEF has also developed a county-wide public education program including the operation of an environmental education center in Key West, designed to teach the public how to interact without harming the coral reef habitat.

Through our marine debris project, we sponsor annual reef and out-island clean-ups, and promote public awareness of the threat that litter poses to marine and bird life through entanglement and ingestion.

REEF RELIEF is a strong supporter of the national marine sanctuaries program. It is literally impossible to explain the evolution of REEF RELIEF without giving credit each step of the way to the marine sanctuaries program--its goals and, most importantly, its personnel. They have provided us with leadership, expertise, and cooperation.

The considerable amount of success that REEF RELIEF has achieved over the past four years can only be measured by the amount of assistance and guidance that we have received from the marine sanctuaries program. Without the sanctuaries program and their dynamic staff, the reefs of the Florida Keys would be in much worse condition than they are now, especially regarding the physical damage caused by anchors and divers.

The sanctuaries program developed the mooring buoy system currently in use at both of the sanctuaries in the Keys, as well as those installed at Sombrero Light off of Marathon and at six reefs off of Key West, areas outside the sanctuaries. Literally hundreds of boats use these buoys every day.

Unfortunately, there are many other heavily-visited reefs in the Florida Keys that do not have the benefit of mooring buoys. A management plan for our reefs would address this need.

Page Three, REEF RELIEF

The creation of a national marine sanctuary for the Florida Keys is critical to preserving the coral reef ecosystem.

We need a comprehensive management plan for the diverse and fragile marine ecosystems of the Florida Keys. Living coral reefs are the most spectacular underwater natural resources in the world. We are fortunate for the existence of living coral within the boundaries of the continental United States and there is a lot of national interest in protecting these reefs. REEF RELIEF is part of the newly-formed Coral Reef Coalition, a group of conservationists from around the world dedicated to saving Florida's living coral reef.

The living coral reef of the Florida Keys offer the most biologically diverse marine ecosystem in the world, unlimited recreational pleasure through diving and snorkeling and glass bottom boat touring. Coral Reefs provide habitat for both commercial and recreational fish species and quite possibly somewhere in the vast diversity of corals are medicines awaiting our discovery.

Living coral reefs require nutrient free water in order to sustain life. For tens of thousands of years, the reefs of the Florida Keys flourished in nutrient-free conditions. Now our reefs are under a severe amount of strain due to the increased effects of man. We have the ability to manage our resources and co-exist in harmony with them, yet we are not doing so.

Page Four, REEF RELIEF

The reef is dying from pollution

Increases population in Monroe County and rapid overdevelopment, which violates the 1972 Clean Waters Act, has led to serious water quality degradation clouding our once "gin clear" waters with algal blooms and sedimentation. Our living coral reefs are swiftly becoming living algal reefs as we continue to introduce nutrients into surface waters. You do not have to be a rocket scientist to figure out that five to ten million gallons of secondarily-treated water entering surface waters on a daily basis is going to harm living coral five miles away.

The Key West Sewage Treatment Plant does not strip out mutrients or or other pollution prior to discharge. Leaky septic tanks is the norm for the rest of the county. A marine sanctuary program must somehow aid the citizens of the Florida Keys to come to grips with nutrient-loading and eliminate the problem.

If our goal is to protect this wondrous resource for future generations, we must be willing to make many substantial investments. A partial attempt to save the ecosystems from the Everglades to the Dry Tortugas will not do. We must have an all-out effort, similar to the efforts that enabled us to walk on the moon, if we are to succeed. We are in a more difficult place than the miner whose canary just died.....we cannot get out of the mine.

Page Five, REEF RELIEF

The Cost Factor —

The cost factor always plays the ultimate role in undertaking such a large project as the Florida Keys Marine Sanctuary. The reefs of the Florida Keys are the most frequented dive destination in the world--approximately two million visitors a year from Key West to Key Largo. There is quite a large dive/snorkel industry that has developed in the Florida Keys over the last ten years that depends on the living coral reef for its success.

It is only logical that a commercial user fee of fifty cents per person would generate quite a bit over the course of a year. In the Key West area, there was talk of limited entry in the commercial dive/snorkel business because of the flood of new boats in the fleet every year. There are many positive results to a limited entry program, including annual licensing fees to permit holders. The permits should be considered part of the privilege of commercially operating a vessel in the marine sanctuary.

The Tourist Development Council from Monroe County spends almost ten million dollars a year promoting the Florida Keys. The problem lies in dealing with all these people once they get out on the reef. There are days when over two hundred people at a time are in the water at one reef. Management is desperately needed throughout the Florida Keys reefs.

Page Six, REEF RELIEF

Boundaries

Faced with the problem of water quality degradation, it is imperative that sanctuary status encompass as much territory as possible. Sanctuary status must address the water quality issue and take the lead in pinpointing the sources of pollution and nutrient loading and eliminate them. Statewide nutrients and pesticides are introduced into Florida's fresh water system that ultimately feeds into the Everglades, Florida Bay, and eventually out to the living coral reef. Agricultural activities throughout the State of Florida contribute to nutrient loading, again in violation of the Clean Waters Act of 1972, which mandated **zero** discharge into surface waters by now.

Sewage outfall from the Greater Miami Area is carried from its ocean outfall southward in a countercurrent that follows the shallow reefs toward Key West bringing with it nutrient-rich material. We must strive to meet the need for nutrient-free waters.

Specific Recommendation for H.R. 3719.

1. Development of strong management plan for core zones, i.e. shallow areas of the reef tract typified by spur and groove formations. Use mooring buoys. No consumptive activities, either commercial or recreational such as fish collecting, live rock harvesting, or spearfishing.

Page Seven, REEF RELIEF

2. Allow trolling for fish within sanctuary boundaries.

3. Eliminate opening day of lobster season by staggering the first day of the season in various zones throughout the reef.

4. No commercial traps allowed within a quarter mile of the core zones.

5. Place certain reefs off-limits to all activities except for baseline scientific studies.

6. Address non-point source pollution.

7. Address point-source pollution.

8. Require licensing and limit entry for all consumptive activities including commercial fishing, fish collecting, diving and snorkeling activities.

9. Anticipate decline of commercial fisheries as they currently exist. Develop long-term plans which include zones for mariculture activities.

10. Zoned management of spearfishing, fish collecting, commercial fishing, diving and snorkeling and treasure hunting.

11. Coordinate programs with Marine Biology Department of Florida Keys Community College.

12. Address coral disease control, monitoring, treatment, and eradication.

13. Establish fines for violating regulations.

14. Mitigate treasure salvaging activities with coral reef conservation projects.

15. Close the reef to commercial dive and snorkeling activities when the winds are in excess of twenty-five knots for safety reasons.

16. Acquire Pigeon Key for sanctuary headquarters.

17. Develop permanent programs incorporating environmental education in local elementary schools.

18. Rebuild Sand Key Lighthouse and convert in into a study center and museum with a small fee for touring.

19. Establish a fifty cents per visitor user fee on all commercial dive, snorkel and glassbottom boats to fund the sanctuary.

ANSWERS FOR SENATOR KERRY
FROM CRAIG QUIROLO

(1) Do you believe that the two small sanctuaries currently located within the Keys reef system have done an adequate job of protecting the designated area? How about in protecting the reef located outside of the sanctuaries?

REEF RELIEF believes that the two existing Marine Sanctuaries in the Florida Keys are extremely successful in protecting the natural resources found within their boundaries. Their expertise has enabled REEF RELIEF to establish a system of eighty--three reef mooring buoys on a thirteen-mile stretch of water south of Key West, outside of sanctuary boundaries.

The presence of sanctuary enforcement officers on the water is probably the single most effective method of protecting these resources from user abuse. Although there is no doubt that the sanctuary-developed reef mooring buoy system provides protection to the living coral from anchor damage, the coral is suffering from diver/snorkeler damage at alarming rates. The reefs of the Lower Keys are generally shallower than those found in the Upper Keys, consequently novice snorkelers/divers are tempted, all too frequently, to stand on the coral to rest or to adjust gear. Enforcement officers are the only means by means which this direct diver/snorkeler damage can be eliminated.

Page Two, Craig Quirolo, REEF RELIEF

There is absolutly no question that a Keys-wide sanctuary would help protect the living coral reef. Education, management and scientific researsh are aspects of reef conservation that are essential if we are to preserve this wonderful natural resource that encompasses not only the living coral reef but, mangrove keys, seagrass beds and multitudes of "back water" coral patch reefs.

It is the desire of REEF RELIEF to see that the integrity and bio-diversity of all of the Keys ecosystems be preserved. The bayside of the Keys, its rich sea grass beds and many patch reefs, are all part of a delicate tropical ecosystems interdependent upon one another for survival. Outer Keys that were once inaccessible to boaters are now inundated with jet ski traffic and their accompanying loud noise. Birds are disappearing, fewer are nesting and the future looks grim.

(2) Why do you suggest that the sanctuary include "as much territory as possible?" What would you suggest as boundaries for the sanctuary?

To express a desire for the sanctuary to include as much territory as possible, it is hoped that the back waters of the Florida Keys (the bayside) would be included in this bill.

We are faced with the grim reality that lack of compliance to the 1972 Clean Waters Act has degraded water quality of the entire Florida Keys marine ecosystem. A Keys-wide sanctuary would provide an effective mechanism for monitoring water quality

throughout the Keys to help pinpoint the sources of pollution.

REEF RELIEF believes the stress placed upon the living coral reef by the increased threats of poor water quality warrants a ban on many consumptive activities now taking place on the waters of the Florida Keys.

We must keep in mind the importance of the commercial fishing industry and their ability to harvest protein for the American people. REEF RELIEF strongly suggests that commercial fishing activies be allowed to continue within the boundaries of the new sanctuary, with the exception of the use of wire fish traps.

A Keys-wide sanctuary will give uniform enforcement to all of the Florida Keys, not just a few select areas.

A Florida Keys National Marine Sanctuary should stop the rampant removal of live rock from federal waters. The collection live rock for use in aquariums is a new industry that has attempted to present itself as a fishery. The fact of the matter is, live rock collection supports an aquarium fad now sweeping the United States and Japan, a fad similar to the ant farms of the 1950's. Removal of the building blocks from the coral reef which sustain a myriad of life for the purpose of decorating a fish tank is a crime. Indiscriminate removal of live rock form the reefs ecosystem, to the degree that is currently taking place, spells disaster for the future of the reef. Big money (1 dollar per pound) is generated from live rock collection

and its huge financial gains are attracting more and more harvesters. This uncontrolled, indiscriminate activity does not compute when addressing coral reef protection.

The seaward boundaries for the sanctuary have to contend with the shipping practices of the offshore tugboat industry and their frequent inability to "make way" against the velocity of the Gulf Stream. Designating the Florida Keys as an International Area to be Avoided by commercial shipping will help in keeping the more powerful tankers and large ships away from the reef but will not address the needs of the slower vessels to "hug" the reef near the Carysfort Light, the Elbow, and off of Key Largo. The boundaries should not put these vessels at risk by forcing them into the Gulf Stream but should work to assure that these vessels have safe transit by these areas.

According to biologist Harold Hudson of the Key Largo National Marine Sanctuary, large sea buoys in deep water well away from the reef could guide vessels around the bend, offering them clear and safe passage. At the present time, the lighthouse markers and navigational aids get lost in the clutter of the developed shoreline. These same deep water markers could also be used on the west end of the sanctuary betwen Rebecca Shoal and the Dry Tortugas. These buoys could be equipped with radar reflectors and low intensity lights timed in a sequence to offer visual guidance at night.

The traditional hugging of the reefs could continue to the degree that these vessels would then be hugging the buoys well away from the reef. The boundaries of the sanctuary should be drawn up so that the distance from the reef to the sea lanes grows wider moving westward from Key Largo. The effects of the Gulf Stream move out, away from the reef as you move westward, and the tugging fleet could safely move out. We must not forget that we are dealing with traditional shipping lanes and customary transiting that has been going on for years. The effort should be made to explain to the merchant navy that the aids will be provided for navigation; that it is not just a matter of restrictions they might think are being imposed on their activities.

REEF RELIEF is aware of the magnitude of this aggressive undertaking and commits our organization to the success of this project.

Senator KERRY. Thank you very much, Mr. Quirolo.

I appreciate each of your testimonies this morning and regret that unfortunately I had an appointment with a president of a foreign country about eight minutes ago. So I am going to have to leave here. I hope none of you will take that as in any way an indication of the committee's intent not to consider this and take into full account all the views and even more explanation than is here today. I think this is a most important issue. I am going to leave the record open for two weeks.

Senator KERRY. I just want you to know that 20 years ago I first went bone fishing down in the Keys and as recently as this year was traveling down through Hawk's Channel and have personally witnessed the changes and the threat to the area and was shocked to see jet ski tracks all over the place, ripping through the grass. It is just reckless. I was astonished in the bird preserve areas where there is just a total disregard for nature.

It was very evident to me that something has to happen. There is no question about it. So as vice chairman of NOPS I just want you to know that I have personal knowledge of it and an enormous affection for the area. I feel very strongly that it is a combination of things. You know, obviously the water quality is a critical question. You cannot keep dumping raw sewage anywhere. We have the problem in Boston harbor, and we are trying to deal with it. We have to face up to that.

You also have to have some management of people, anchors and boats and sort of a reckless attitude about the ability of this very fragile system to be able to withstand the onslaught which it is submitted to on a daily basis.

So I am committed to trying to help Senator Graham and others to work out something that is as reasonable and sensible as possible.

The staff will submit to each of you some written questions. I had some questions here that I wanted to ask you, and unfortunately the time constraints do not allow that. It will be part of the record, and it will be a very important part of our developing a response to this.

So I want to thank each and every one of you for your patience and for taking time to be with us.

We stand adjourned.

[Whereupon, at 12:10 p.m., the hearing was adjourned.]

ADDITIONAL ARTICLES, LETTERS, AND STATEMENTS

SUBJECT: Written presentation on S. 2247, The Florida Keys National Marine Sanctuary.

DATE: 8 June 1990

FROM: Henry A. Feddern, PhD
Scientific Liason
Florida Marine Life Association
156 Dove Ave.
Tavernier, Fla. 33070

TO: Senate Commerce Committee
Subcommittee on National Ocean Policy

Mr. Chairman and Subcommittee Members:

I appreciate your invitation to write on behalf of many citizens who contribute to the local and national economy and who will be significantly damaged financially by the proposed Marine Sanctuary. I am the Scientific Liason for the Florida Marine Life Association, a trade group of fishermen and many others who deal with marine aquarium organisms. I have bachelor, master, and doctorate degrees in marine biology from the University of Miami, have engaged in marine aquaculture for 7 years, and have been active in the Marine Life Fishery for the past 34 years.

The habitat maps that I asked Senator Graham's office to order for your viewing cover the reef areas between Miami and Key West. Accompanying the maps is a research paper giving an excellent introduction to the ecology of the reefs. I consider this publication, "The Ecology of the South Florida Coral Reefs: A Community Profile", published by Minerals Management Service (MMS 84-0038) to be vital reading by anyone required to decide coral reef issues and needing a broad understanding of the reef environment. It is written in layman terms, but also includes the backup scientific data. My calculations of total areas, coral areas, and coral percentages were derived from these data.

The 156 mile length of reef covered by the maps, when multiplied by the distance from shore to the 300 foot isobath, yields an area of about 1300 square miles. This is two thirds of the area included in Representative Dante Fascell's bill. The combined area of Biscayne National Park, Pennekamp State Park, and Key Largo and Looe Key National Marine Sanctuaries, is 475 square miles. This 475 square miles, or 36.5% of the total area, contains 43.6% of the coral areas of the Keys, and includes the best coral areas. The remaining coral areas are much less desirable, as indicated in "The Florida Keys Sanctuary Expansion Study Draft" of September 28, 1989, developed by the Sanctuaries office.

The present mix of Sanctuaries, Parks, and so-called unprotected areas has resulted in a delicate peaceful balance of uses by a wide variety of user groups. This balance is being adversely affected by outside forces, including Sanctuary proposals. The present sanctuaries are not able to accomplish their mission of preserving the coral reef. Although they are relatively successful in allocating their resources among selected user groups, they can do little to protect themselves against outside threats such as vessel groundings or polluted water. Present Sanctuary law is vague, unfair and arbitrary because the management plans are not fully based on scientific research and data. I cannot reconcile the allowing of current recreational and commercial consumptive uses while banning Marine Life Fishing, when scientific studies have shown that marine life fishing does not harm the environment. All present Sanctuaries and Parks completely ban marine life fishing. Sanctuary rules supposedly have changed to allow multiple use since the Act was passed, but no clear-cut rules have been written. The fact that the current Sanctuary and Park coral reefs in the Keys are among the most stressed reefs in the world, combined with the fact that all Marine Life Fishing is prohibited in them, proves that Marine Life Fishing is not the cause of degradation, and thus there is no known valid reason for prohibiting the fishery in any future Sanctuary, nor in the present Sanctuaries either.

The Looe Key Marine Sanctuary has banned the Marine Life fishery merely for administrative convenience. The Final Environmental Impact Statement, Proposed Looe Key National Marine Sanctuary states on pgs. 117-118: "A prohibition on collecting (marine life fishing) would not require the construction of an administratively burdensome permit and monitoring system for commercial collecting.... It appears that there are many suitable areas for tropical specimen collectors to catch tropical fish and invertebrates in Florida; including shallow inshore areas, inshore coral heads, mid-channel reefs (in the middle of Hawk's Channel), and the entire outer reef." This latter stated area is incorrect since so much outer reef is already protected in Parks and Sanctuaries. The whole argument also fails as a reason for banning the Marine Life fishery because with a County-wide Sanctuary, there would be no other feasible collecting areas in the Keys. Almost all Marine Life organisms caught by Keys fishermen are caught on the Atlantic Ocean side of the Keys.

The Marine Life Fishery is recognized by the State Marine Fisheries Commission as one of the more important fisheries in South Florida. It is a multi-million dollar fishery, and the only fishery in Florida that brings in almost all of its income from out of State and out of Country. For instance, the portion of the Marine Life Fishery income derived from

Live Rock alone in 1988 was at least 2 million dollars in direct income, and 6.4 million dollars in Local Economy Value (according to the economic multiplier described on pg. 62 of the Looe Key Final EIS). The income from the rest of the Marine Life Fishery has to be added to this to determine the total value to the community of the fishery. Banning or unfairly restricting this fishery would cause irreparable harm to all the fishermen in this fishery and damage the County economy as well. Is a Sanctuary designation allowed to do this? If the Marine Life Fishery is not going to be banned or restricted, then say so in writing. If you do say it will not be restricted, then don't change your mind at the last minute to ban it, as was done in the Final EIS of Looe Key.

Since almost all of the harvest is shipped by air freight, this fishery is a major contributor to airline income. A significant amount of the marine life fishery output is exported to other countries. A significant benefit to people in other parts of the Nation is that future generations of the Nation's managers and marine biologists, by being able to keep marine aquaria, will gain an appreciation of reef ecology and its complexity that they would not otherwise obtain.

I have included with this presentation a written supplement suggesting a change to Senator Graham's bill that will hopefully make it a more acceptable to everyone. It covers all Atlantic Ocean waters along the Keys and embodies a management mandate that fills in the crannies between the various management agencies already in existence in the area, without the expense or controversy of duplication or supplanting of authority. It would establish a "Florida Keys Coral Conservation Area Act".

The proposal enhances the corals themselves by regulating ship groundings, oil drilling and water pollution, and excluding all other activities such as fisheries, from regulation. This exclusion avoids the expense of duplicating the work of the Federal Fishery Management Councils and the Florida Marine Fisheries Commission, and eliminates most of the current controversy. According to the few scientific studies done to date, the Marine Life Fishery does not harm the environment, yet Sanctuaries ban it as resource removal while Councils consider it a fishery in no danger of being overfished. You have to realize that almost all tourists who visit the Parks and Sanctuaries go to the coral-rich fore-reef zone of the barrier reef because that's the prettiest area, while Marine Life fishermen mostly go elsewhere. Thus there is very little natural overlap between the two user groups, and what is harvested would almost never be seen by tourists in any case. This separation has been effected voluntarily by the people at no cost to the government or to the private sector. Enforcing a complete separation would

definitely not be cost-effective. See a complete discussion of this in my answer to the House's question 1 elsewhere in this packet of information.

The Federal Fishery Management Councils are allowing the State of Florida to develop the management plan for the Marine Live Fishery. Unfortunately, because the Councils are not developing a plan, the Sanctuary office can do so its regulations in this matter (attached) state that unless the Fishery Councils draft fishing regulations acceptable to the Secretary, then the Secretary can prepare his own without using any other input.

As I noted above, people have said that Sanctuary rules have changed to allow multiple uses, but nothing has been put down in black-and-white on exactly what this means, and no specific definitions of the vague terms used throughout the Sanctuary regulations have been established. Some of these vague terms in relation to the Marine Life Fishery which would give a Sanctuary manager far more latitude than intended by Congress are: resource; compatible use; special marine areas; maximum extent feasible; basic integrity; unduly restrict; consistent and compatable standards; consistent with purpose; fishing; fishing activities; and activity zones. These terms need to be defined, the person or organization defining them named, and the criteria used to implement them spelled out, in advance of any Sanctuary designation. Until these things have been done so that everyone will know exactly what to expect from a Sanctuary (or other type of protection), and everyone will be fairly treated under it, there will continue to be extreme controversy and opposition.

It has been claimed that opponents of the proposed Sanctuary are overreacting without cause. That may be so, but so far no one has guaranteed in writing that our fears of severe fishery restrictions are unfounded.

Specific problems with S. 2247 as presently written are:

1. Sanctuary designation is asked before development of a management plan.
2. Bill gives direct managment of all resources to Sanctuary office.
3. Vague terminology as noted above.
4. Regulation of fisheries by a preservation authority.
5. Sanctuary can expand later. "Minor" is not defined. (Pennekamp Park is trying this expansion ploy).
6. Secretary has the sole authority to determine "compatability" with the Act.
7. Definition of "adverse effect" is far too broad, giving the Sanctuary manager effective carte-blanche powers to prohibit any activity no matter how small or how insignificant an effect, merely on the basis that it has an effect. This term has to be spelled out with numbers.

8. "Mineral extraction" could be construed by some people as prohibiting the harvest of "Live Rock" by the back door method, and is a clear intrusion into the authority of the South Atlantic Fishery Management Council and the Florida Marine Fisheries Commission, unless harvest of Live Rock for aquarium purposes is exempted.

The Council and Commission currently regulate fishing in their respective areas. This proposed Act must not duplicate or supersede this authority. Mr. Billy Causey, when a Marine Life fisherman, opposed the creation of a Looe Key Sanctuary on these grounds in 1980. The Sanctuary's answer was to the effect that although the Fishery Conservation and Management Act provides environmental protection, its principal focus is the management of selected commercial and recreational fisheries, and the Sanctuary can do a better job of protection. Unfortunately, experience over the past decades has shown that Sanctuaries have not been able to prevent coral damage caused by hordes of thoughtless tourists attracted by a Sanctuary designation to the area, and Sanctuaries lack the legal power to compel reductions in water pollution sources outside their boundaries. What is needed in terms of legislation is a new mechanism to deal specifically with these problems.

A Marine Sanctuary whose purpose is to <u>preserve</u> the resources rather than a mechanism to <u>conserve</u> them is totally unacceptable to us. Restrict the scope of S. 2247 to the areas of ship groundings, oil exploration/drilling, and water pollution. Make us all happy by eliminating the controversial provisions and passing the things we have all agreed with, thus speeding passage of legislation that <u>is</u> needed in the Keys.

Thank you for your time.

Henry Fiddler

WRITTEN TESTIMONY OF

PROJECT REEFKEEPER
AND THE
AMERICAN LITTORAL SOCIETY

Project ReefKeeper is a national affiliate of the American Littoral Society specializing in the protection of coral reefs and the wise use of their resources.

Project ReefKeeper staff members have extensive analysis experience regarding the effects on the Florida Keys coral reef ecosystem of policies of the Minerals Management Service, Environmental Protection Agency, National Marine Sanctuaries Program, the federal Fishery Management Councils and state agency equivalents. The combined professional expertise of our 19-member Scientific Advisory Panel covers reef ecology, marine fisheries, marine water quality, coral physiology, marine protected areas management, and more.

This testimony, submitted by Project ReefKeeper Executive Director Alexander Stone on behalf of the American Littoral Society, addresses S.2247 and the proposed establishment of the Florida Keys National Marine Sanctuary.

Sanctuary Designation

Project ReefKeeper and the American Littoral Society staunchly support the designation of a Florida Keys National Marine Sanctuary encompassing the entire Florida Keys Coral Reef Tract, and providing comprehensive management of its resources as proposed in Senate Bill S. 2247.

A Unique Marine Area

We support a finding that these marine environments are uniquely significant. We present documentation from the Minerals Management Service (Exhibit A), the South Florida Regional Planning Council (Exhibit B), and the US Fish and Wildlife Service (Exhibit C) which establishes the Florida Keys Coral Reef Tract as the only shallow-water coral reef system in the United States.

Distinctively unique natural features and resources are found throughout the Florida Keys Reef Tract. A few examples are the French Reef Caverns off Key Largo, the Conch Reef Wall and Pillar Coral Reef off Islamorada, Alligator Reef's giant brain corals off Long Key, Sombrero Reef's fore reef canyons off Marathon, the staghorn coral fields off the Dry Tortugas -- and many more sites too numerous to mention. Each of these unique features individually merits sanctuary designation -- cummulatively so does the entire Florida Keys Reef Tract.

This nation does not have "too much" protected coral reef; the small fraction that is protected is not enough to meet the country's need and responsibility to protect this ecosystem.

An Area of Special National Significance

Project ReefKeeper supports a finding that these marine environments are nationally significant. To document that active concern for coral reef protection is nationwide, we present a listing of our own 73-group ReefKeeper Network and a listing of 72 organizations with a combined membershio of over 8 million that have recently banded together to protect the Flower Garden Banks coral reefs.

The even more spectacular Florida Keys coral reefs belong to the entire nation and should be preserved and protected for the longterm benefit and enjoyment of the entire nation -- notwithstanding the protests of a few consumptive users, or the lack of vision of some local politicians.

An Area With Extensive Resource Values

We support a finding that these unique marine environments are richly endowed with every natural resource value specifically intended for comprehensive management through the National Marine Sanctuaries Program -- and we present documentation from the Minerals Management Service and U. S. Fish and Wildlife Service (Exhibit C page 4 - 6)to that effect.

We disagree with the contention that sanctuary designation would hurt the local economy and tourism. Quite the contrary is true. It is precisely the Florida Keys areas nearest existing sanctuaries that now enjoy the healthiest tourist economy. As one indication of this economic health, we present a comparative listing of Florida Keys Dive Centers (Exhibit F). Forty-five percent of all listed dive centers service the small fraction of the Florida Keys Reef Tract within existing sanctuaries.

An Area of Spectacular Biological Diversity

Project ReefKeeper supports a finding that these sensitive marine environments contain literally thousands of species, an unparalleled marine biological diversity equivalent to that of a tropical rain forest. We present documentation from the Minerals Management Service (Exhibit A), U. S. Fish and Wildlife Service (Exhibit C), and National Marine Sanctuaries Program (Exhibit G) to that effect.

BASED ON THE FINDINGS ABOVE, WE RESPECTFULLY URGE THE COMMITTEE TO SUPPORT DESIGNATION OF THE FLORIDA KEYS NATIONAL MARINE SANCTUARY AS A UNIQUE MARINE AREA OF SPECIAL NATIONAL SIGNIFICANCE.

An Area Under a Variety of Environmental Threats

Project ReefKeeper supports a finding that these fragile marine environments are threatened with potentially irreversible damage and loss from several onshore and offshore impact sources, including vessel groundings, hydrocarbon exploration, marine water pollution, fishing overexploitation, and visitor anchor damage.

Vessel Groundings

Vessel grounding destruction of coral reef habitat in the Florida Keys is a matter of painful record. National marine sanctuary designation is necessary to complement and cover gaps in existing Coast Guard and other regulatory authority.

It is only through sanctuary designation that funds from fines and liability awards resulting from groundings can be used to mitigate coral reef damage and increase enforcement. Funds from groundings outside a marine sanctuary -- even in a national park -- cannot be so applied and must go into the general fund.

Sanctuary opponents point out that recent freighter groundings ocurred in Key Largo National Marine Sanctuary and Fort Jefferson National Monument. But that does not prove that sanctuary designation won't deter groundings.

Study of an area chart (Exhibit H) shows that the topmost and bottommost sections of the Florida Keys Reef Tract are under Sanctuary or National Park jurisdiction. However, an enormous regulatory gap in between, exceeding 100 miles, tempts vessel captains to risk "cutting the corners" to hug the unregulated and exposed midsection of the reef tract.

What recent groundings actually prove is that only sanctuary designation of the entire Florida Keys Reef Tract will effectively deter groundings through enforcement of a prohibition on specific types of vessel traffic within the sanctuary.

Offshore Oil

Only Congressional intervention through the annual appropriations process has prevented offshore oil exploration within the zone of influence of the Florida Keys Reef Tract. Offshore oil operations could have devastating impacts on coral reefs, and we present the most recent documentation from the Minerals Management Service (Exhibit A) that details those impacts.

Unfortunately, Minerals Management Service lease sale guidelines focus on large scale planning areas and are incapable of

considering the environmental sensitivity of a rare and discrete area such as the Florida Keys Reef Tract. Project ReefKeeper submits documentation from the Minerals Management Service (Exhibits C, I) explicitly to that effect.

It is imperative that this regulatory gap be corrected and the Florida Keys coral reefs be protected. Designation of a Florida Keys National Marine Sanctuary can achieve that by prohibiting mineral and hydrocarbon exploration within the sanctuary.

Marine Water Pollution

We propose and support a finding that reduced water quality, and particularly nutrient pollution, is one of the most serious longterm threats to the vitality and survival of the Florida Keys Reef Tract. We present documentation from the Florida Department of Natural Resources (Exhibit J) and from the National Undersea Research Program (Exhibit K) specifically to that effect.

Project ReefKeeper presents documentation from the Florida Department of Community Affairs (Exhibit L) indicating persistent local county unwillingness or inability to address onshore sources of marine pollution. We also present documentation from the Florida Department of Environmental Regulation (Exhibit M) indicating that both that state agency and EPA rulemaking are not -- and possibly cannot -- address the special and area-specific water quality management needs of the Florida Keys Reef Tract.

Designation of a Florida Keys National Marine Sanctuary would provide a vital opportunity to protect these irreplaceable marine environments by addressing this water quality management gap within the sanctuary's comprehensive management plan. To achieve this, the sanctuary would require jurisdiction over onshore discharges into sanctuary waters. Therefore, Project ReefKeeper strongly recommends that sanctuary boundaries include all submerged lands and waters seaward of the Florida Keys shoreline.

Opponents of this sanctuary designation very adamantly contend that the existing Key Largo and Looe Key National Marine Sanctuaries have failed to protect coral reefs within their boundaries from water pollution. These opponents are missing the point. Existing boundaries for those two sanctuaries do not provide sanctuary management with enforceable jurisdiction over polluting discharges from onshore. Inclusion of these existing sanctuaries within the recommended boundaries of a new Florida Keys National Marine Sanctuary would.

Fishing Overexploitation

Project ReefKeeper proposes and supports a finding that the tropical fisheries associated with these marine environments are being seriously depleted, with many species deteriorating steadily towards possible stock collapse. We present documentation from the South Atlantic Fishery Management Council (Exhibit N) and from the Gulf of Mexico Fishery Management Council (Exhibit O) indicating inadequate spawning stocks and anticipated loss of reef fish genetic diversity.

Additionally, there are absolutely no federal regulations managing the harvest of the tropical aquarium fish so characteristic of these coral reefs.

It is not realistic to expect the regional multi-state fisheries management regime of the federal Councils to tailor regulations or priorities to fit the unique situation of the Florida Keys Coral Reef Tract.

Only a Florida Keys National Marine Sanctuary designation, through its comprehensive management plan, can address these concerns by complementing fishery management council regulations without unduly interfering with regional fisheries management regimes and priorities.

BASED ON THESE FINDINGS, WE RESPECTFULLY URGE THE COMMITTEE TO SUPPORT DESIGNATION OF THE FLORIDA KEYS NATIONAL MARINE SANCTUARY AS THE MOST VIABLE MEANS OF COMPLEMENTING DIVERSE EXISTING REGULATORY AUTHORITIES AND PROVIDING VITALLY NEEDED COMPREHENSIVE MANAGEMENT FOR THE FLORIDA KEYS CORAL REEF TRACT AND ITS SPECIALLY SIGNIFICANT RESOURCES.

Sanctuary Designation a Proven Solution

Marine sanctuaries have proven to be very effective at protecting coral reef resources, within the limitations imposed by jurisdictional boundaries and sanctuary management plans. We submit documentation from the 1989 Coastal Zone Symposium (Exhibit P), showing the success of Looe Key National Marine Sanctuary at achieving its management plan objectives.

Project ReefKeeper urges this Committee to provide the statutory framework for the Florida Keys National Marine Sanctuary that will make it possible for it to implement comprehensive management and attain broad resource protection objectives.

Specific Recommendations on S.2247

Our specific recommendations regarding S.2247 are:

- Set sanctuary boundaries to include the entire Florida Keys Reef Tract seaward from the Florida Keys shoreline, including existing sanctuaries, to address effectively water pollution and vessel grounding impacts.
- Implement comprehensive management to address all onshore and offshore impacts by complementing existing regulatory authority.
- Require comprehensive management plan completion within 30 months of bill enactment, to assure timely implementation of Congressional intent.
- Implement usage zone management to provide reasonable access to the sanctuary for all compatible uses, while safeguarding key natural features and longterm resource values.
- Define compatible uses as all uses not found to be incompatible, to minimize unwarranted use restrictions.
- Prohibit commercial vessel traffic, mining and hydrocarbon exploration within the sanctuary as uses incompatible with the protection of sanctuary resources to serve the nation's longterm benefit and enjoyment.
- Require the identification of other incompatible uses.
- Require review of all planned Federal undertakings within the zone of influence of the sanctuary, to protect sanctuary resources from adverse effects of such Federal actions.

Thank you for the opportunity to testify.

Alexander Stone

ALEXANDER STONE
Director
Project ReefKeeper/
American Littoral Society

STATEMENT OF THE HONORABLE DANTE B. FASCELL

BEFORE THE SUBCOMMITTEE ON NATIONAL OCEAN POLICY STUDY

ON S. 2247, THE FLORIDA KEYS NATIONAL MARINE SANCTUARY AND PROTECTION ACT

June 14, 1990

Mr. Chairman, and members of the Subcommittee, I thank you for holding this hearing on the legislation I have introduced in the House and which Senator Graham has introduced in this body, to protect the living coral reefs in the Florida Keys, the only such ecosystem in North America. Creating a unified Florida Keys National Marine Sanctuary would give this unique resource a designation comparable to its national significance. There are many people who, like me, have fished and swam in the Florida Keys for years who can tell you of other days when the water was cleaner and the fish were more abundant. Sadly, those days are gone forever.

When three commercial freighters ran aground on the coral reefs last year, all of the threats to the survival of the coral reefs were brought squarely into focus. These threats include vessel groundings, uneducated and careless use of the resource and poor water quality. We now have a golden opportunity to make something good come out of these groundings by taking positive action to save the precious resource that brings people to the Florida Keys to live and play and which supports the marine life so vital to the economy -- the coral reef.

My original bill was introduced in order to get the issue aired before the last session of Congress adjourned. We did not have time to consult the governments involved or the various interest groups. Since then, however, many people have made constructive suggestions as to how this proposal could be improved and refined, but no one has argued against the need to pro-

tect the reef. Senator Graham's bill reflects a good number of these suggestions and I support them wholeheartedly. With this hearing, we move another step closer to providing the needed protection for the coral reefs.

House mark-up of my bill is scheduled for next week and I am hopeful that it will include a provision for the development of a comprehensive management plan under the existing Section 304 process of the Marine Protection, Research, and Sanctuaries Act of 1972, (16 USC 1434). It should also provide for the establishment of an Advisory Council composed of representatives of state and local governmental and private groups which must be consulted during the development of the management plan.

One of the most overt threats to the area, and one which I have long opposed, is the threat of offshore oil and gas exploration. The Department of the Interior previously sought to lease this area for oil and gas development. As we work to create this sanctuary, it makes no sense to allow such a detrimental activity in an area to which we are granting a significant environmental designation. Therefore, I ask that you include a prohibition on mining, mineral extraction, and hydrocarbon exploration, development, or production in this legislation as a necessary protection to the proposed Florida Keys National Marine Sanctuary.

The National Marine Sancturaries Program (NMSP) has shown that it is a flexible tool in balancing the various needs of each individual resource through the management plans it promulgates. Many people have urged that the management plan for the proposed sanctuary be similar to the approach employed to preserve Australia's Great Barrier Reef. Their management concept designates zones for various uses in different areas, but leaves approximately 98% in the "general use zones" and open to most activities.

I support this type of approach, but it must be applied with cau-

tion because the Florida Reef Tract is not nearly as large as the Great Barrier Reef. The management plan that is implemented should enable those who make their livelihood from the reefs to continue to be able to do so. While the reefs are an ecological treasure, they are also a valuable economic and recreational resource. For various cultural, historic, and economic needs, activities such as commercial and recreational fishing and treasure salvaging must be allowed to continue responsibly where they will not cause damage to the reef itself. The consideration of the continuance of these activities must be a factor in the formulation of the management plan in a manner which is consistent with the NMSP's mission.

One of the Florida Keys' most important industries is commercial fishing. This has been one of the more controversial aspects of sanctuary designations in the past, and it is in this proposal as well. Representatives of both the commercial and tropical fish industries have expressed a degree of comfort with the administration of fisheries polices to continue to be administered by the bodies currently regulating these activities. Fishermen understand the need for sound management of fisheries, but we must ensure that they are allowed to continue to earn a livelihood.

The impetus for this legislation was the series of vessel groundings last year, and it is probably the easiest threat to address. The Coast Guard has submitted, and the President has endorsed, a proposal to the International Maritime Organization (IMO) which would create an "area to be avoided" for commercial shipping traffic off much of the Florida Reef Tract. I am pleased that the Coast Guard has initiated this proposal and that, according to U.S. representatives to the IMO, early indications are that it will be favorably received by that body. I think it is important that the provisions of this proposal also be codified domestically in this bill. The restrictions on ship trafficking in the "area to be avoided" would be

restricted to vessels 50 meters or more in length or those carrying hazardous substances. Furthermore, it permits ship traffic through Hawk Channel, the Main Ship Channel and the Southwest Ship Channel and would also permit traditional anchorage areas to be used.

The proposed two-nautical-mile buffer zone from areas determined to be of "ecological significance and navigation hazard" is very germane to what we are trying to accomplish. The deterrent for an "area to be avoided" is that insurers will not cover claims for damages caused by a vessel in these areas, which gives captains a strong incentive to comply with such a designation. If caught, vessels travelling inside the buffer zone would be cited for violating the law and these citations would be reported to the vessel's insurance carrier. Properly observed and enforced, these designations will substantially assist our efforts to regulate commercial shipping passages through the Straits of Florida and protect the coral reefs.

The Florida Keys are blessed with a wealth of marine resources which we know need to be protected from the number of threats they face. The damage to the coral reefs from last year's accidents was extensive, but we were fortunate that these accidents occurred in federally protected waters because it gave the government legal avenues to assess fines and penalties and pursue monetary damages in the courts. What these groundings showed us, though, is how vulnerable and unprotected this area has been to a major catastrophe and how some sort of designation is needed.

Had these groundings taken place in unprotected waters, and had their cargos spilled into the water, it is conceivable that there could be very little legal recourse to pursue monetary damages. While the issue was being argued in the courts, the people whose livelihood depend on the reefs, and the reefs themselves, would suffer. This is one reason to create a uni-

fied Florida Keys Sanctuary. Another good reason is that all fines and penalties for violations in a National Marine Sanctuary are returned to that individual sanctuary for restoration of the damaged resource.

One of the issues which many have addressed on this proposal is the very serious problem of poor water quality in the area. Scientists, fishermen, divers, and others can explain how poor water quality affects the entire ecosystem in the region. Needless to say, like any other polluted habitat, poor water quality makes it increasingly more difficult for the resource to sustain life. At this time, there is strong evidence that fertilizer runoff from South Florida's agricultural lands, sewage discharge in Dade County, and various sources of runoff from the Keys are all contributing to the continuing degradation of water quality. Some very good data has been produced, but there has never been enough of a commitment in funding to determine precisely which sources are responsible for exactly which problems. We must find these answers soon, and we must turn them into strong and effective policies to combat the problem.

Without the substantial commitment to build a data base, develop programs and methods to improve water quality, and constant monitoring of water quality, marine sanctuary designation will not save the reefs. A good first step would be to provide the necessary funding to enable NOAA to manage the sanctuary and meet its needs. NOAA officials have told me that they estimate first year start up costs for the proposed sanctuary to be $750,000. This amount is provided for in the House version of the bill and I urge you to include such an authorization in this legislation.

Several people on both sides of this proposal have correctly stated that creating the sanctuary and adequately funding it are two different matters. I have consistently supported full funding for this program, and on

several occassions requested such funding from the Appropriations Committee. Our nation's marine environment has only just begun to get the attention it deserves; this program should not have to rob Peter to pay Paul with its scarce resources. I will continue to support increased funding for this program and, with several new sanctuaries in the pipeline, I hope that, during the next reauthorization of the NMSP, you will increase the authorization levels for this important program.

The only living coral reef in North America deserves to be fully protected and the sanctuary program provides the flexibility by allowing compatible uses. Some people may have to get used to doing things a little differently and, yes, there may be some areas that are restricted from certain activities. That is the price we all must pay if we are going to do what is right and what is necessary to preserve the integrity of the reef system. It is clear that the job is too big for the county, the state, the federal government or the private sector to tackle individually; but it is not too big if all groups work together to do what needs to be done.

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CORAL REEF COALITION

A Coalition to Secure Comprehensive Lasting Preservation of the Biological Diversity and Productivity of Florida's Coral Reef Ecosystem and Wise Use of Its Resources

DeeVon Quirolo
Florida Keys Coordinator
Reef Relief
1223 Royal St.
Key West, FL 33040

Bill Mott
Washington Coordinator
Center for Marine Conservation
1725 DeSales St., NW
Washington, DC 20036

June 12, 1990

The Honorable Ernest F. Hollings
United States Senate
125 Russell Senate Office Building
Washington, DC 20510

Dear Senator Hollings,

As members of the newly-formed Coral Reef Coalition, we would like to express our strong support for bill S. 2247, the "Florida Keys National Marine Sanctuary and Protection Act." We urge you to cosponsor this comprehensive legislation, which was introduced by Senator Bob Graham on March 7, 1990.

The south Florida coral reef tract is one of our nation's most valuable natural areas. Not only is it an ecological wonder with biological diversity on par with the world's tropical rainforests, but also the reefs are of critical economic importance to the region. Unfortunately, this coral reef ecosystem is under seige from many threats, ranging from water quality problems to destructive vessel groundings.

Senator Graham's legislation would designate this unique area a national marine sanctuary and would provide for long-term comprehensive protection of the area's spectacular marine habitats. Knowing of your interest in protecting our marine environment and your past personal involvement as a scuba diver, we hope you will lend your support to this legislation.

Thank you.

Sincerely,

The Nature Conservancy
Florida Environmental Fund
Fla. Keys Chapter, Izaak Walton League
Environmental Defense Fund
Florida Keys Marine Sanctuaries, Inc.
The Wilderness Society
1,000 Friends of Florida
Coast Alliance
Friends of the Everglades
Ocean Alliance
Florida Assoc. of Dive Operators (FADO)
National Wildlife Federation
Fla. Keys Audubon Society
Sierra Club - Florida Chapter
Reef Relief
Project ReefKeeper/American Littoral Soc.
Florida Audubon Society
Greenpeace
Fla. Keys Fishing Guides Association
National Audubon Society
Last Stand
Defenders of Wildlife
American Oceans Campaign
Florida Wildlife Federation
Coral Reef Community Foundation
Florida Conservation Association
Fla. Defenders of the Environment
Manasota 88
Natural Resources Defense Council
Center for Marine Conservation

Management Association
for Private
Photogrammetric Surveyors

June 11, 1990

Senator Ernest F. Hollings, Chairman
National Ocean Policy Study
Senate Committee on Commerce, Science
and Transportation
425 Hart Senate Office Building
Washington, DC 20510

Dear Mr. Chairman:

The Management Association for Private Photogrammetric Surveyors (MAPPS), a national trade association of private surveying and mapping firms, wishes to have this statement entered into the record of your June 14 hearing on reauthorization of NOAA's ocean and coastal programs.

MAPPS is deeply concerned about the manner in which the Office of Charting and Geodetic Services (C&GS) is unfairly competing with private firms, particularly small business. Specifically, C&GS has initiated a program known as "Supernet", to provide a "super network" of Global Positioning System (GPS) survey control points in various states. We have been told that NOAA personnel and equipment will be dispatched from Washington, DC to various states to perform this work, that such projects will be funded through cooperative agreements between NOAA and individual states, and in some cases the project will be 100% funded by a state.

Our concern is that such agreements constitute unfair government competition with private business. There are several private firms with multi-channel, dual frequency GPS satellite receivers, as well as the personnel, experience and qualifications to perform the required services. We believe the Federal Government, and state government, should utilize these services. The Supernet program goes beyond a normal Federal activity in as much as it includes non-appropriated funds and a service that is not solely for Federal use, but for state, local and private use as well.

Since 1955, it has been the policy of the U.S. Government that

> the Federal Government will not start or carry on any commercial activity to provide a service or product for its own use if such product or service can be procured from private enterprise through ordinary business channels.

John M. Palatiello, Executive Director
12020 Sunrise Valley Drive, Suite 100, Reston, Virginia 22091 (703) 391-2739

In 1986, the White House Conference on Small Business declared its opposition to

> direct, government-created competition in which government organizations perform commercial services.

That gathering of more than 1,800 small business owners from across the Nation also recommended that Congress and the Administration adopt policies that

> require strict government reliance on the private sector for performance of commercial-type functions ... Funds controlled by a government entity must not be used to establish or conduct a commercial activity on U.S. property.

We are concerned the Supernet program violates these policies. Moreover, this unfair competition and unnecessary Federal activity should not be permitted given the current budget deficit, particularly when such a service can be performed by private, commercial contractors.

NOAA in general, and C&GS in particular, have accomplished some valuable work in the establishment of professional and technical standards, research and development, and the funding and administration of grants. We would not want to interfere with these appropriate and important Federal functions. It is not, however, a proper role of government to perform activities that are commercially available. This is a responsibility of the private sector.

While we recognize that C&GS has the authority to enter into cooperative agreements pursuant to 30 U.S.C. 883(e), we believe the agency's current practice exceeds that authority. Therefore, we would urge that this section of the law be amended to limit use of this authority to those instances when (1) after conducting a search of potential commercial sources in the Commerce Business Daily, C&GS determines that the facilities and resources of Federal agencies must be utilized to provide a service that is of such a particular or unique nature that it not available from the private sector, (2) performance of such service is not competitive with the private sector, and (3) performance of such service can be made available with interfering unduly with Federal programs.

We urge your consideration of our views and would be pleased to discuss this matter further or answer any questions.

Sincerely,

John M. Palatiello

John M. Palatiello
Executive Director

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